

## THE GENUS *POTHOS* (ARACEAE–POTHOIDEAE–POTHEAE) OF THAILAND AND INDOCHINA

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### SUMMARY

An account of *Pothos* for Thailand and Indochina [taken here to comprise Myanmar, Cambodia, Lao P.D.R, Vietnam, subtropical China (Guangxi, Guangdong, Guizhou, Hainan, Hong Kong, Hubei, Sichuan, Yunnan)] and Taiwan is presented as a precursor of the forthcoming Flora of Thailand treatment. Fourteen species are recognised; one newly described and three validated for the first time. Extensive new synonymies are proposed. *Pothos hermaphroditus* (syn. *Batis hermaphrodita*), *P. angustifolius* (syn. *P. scandens* var. *helferianus*), *P. leptospadix*, *P. cognatus* (syn. *P. scandens* var. *cognatus*) *P. zollingerianus* (syn. *P. scandens* var. *zollingerianus*), *P. horsfieldii*, *P. scandens* var. *javanica*, *P. scandens* var. *zeylanica*, *P. scandens* var. *sumatrana*, and *P. scandens* forma *angustior* are reduced to *P. scandens*; *Pothos balansae*, *P. cathcartii*, *P. chinensis* var. *lotienensis*, and *P. warburghii* to *P. chinensis*; *Pothos ellipticus*, *P. grandispathus*, and *P. ridleyanus* to *P. kingii*; *Pothos penicilliger* to *P. lancifolius*; and *Pothos peninsularis*, *P. kunstleri*, and *P. maingayi* to *P. curtisii*. Brief discussions of geography, shoot architecture and life form are presented. Dichotomous and multi-access keys to species and a geographical species finder-list are provided. All species are illustrated.

**Key words:** Araceae, *Pothos*, Indochina, Thailand

### INTRODUCTION

*Pothos* L. is a genus of c. 70 species of subtropical and tropical, predominantly forest root-climbing lianes distributed from Madagascar to Western Oceania (east to Vanuatu) and China (north to Hubei) to Australia (south to Queensland, New South Wales). The greatest diversity is met with in Indo-Malesia where the largest concentration of species and widest diversity is to be found in Borneo (see e.g. Hay et al., 1995).

*Pothos* is placed in tribe Potheae (sensu Mayo et al., 1997), a palaeotropical assemblage of three very similar, possibly inseparable, genera. Besides *Pothos*, the other genera, both monospecific, are *Pothoidium* Schott and *Pedicellarum* M. Hotta. For discussion of generic delimitation in Potheae see Boyce & Hay (1998).

Linnaeus (1753, 1763) treated *Pothos* as a genus of climbing aroids with bisexual flowers. Subsequently many climbing aroids were included to form a heterogeneous assemblage. Early in the 19th century Schott recognised that *Pothos* was, as then defined, 'unnatural' and in a series of papers (Schott, 1832, 1856–1857, 1860) redefined the bisexual-flowered aroid genera. The current circumscription of *Pothos* is essentially that of Schott (1832, 1856–1857, 1860). Schott (1856–1857) established two

subgenera, *Pothos* (as *Eupothos*) and *Allopothos*. Engler (1905) further subdivided Schott's subgenera (referring to them as sections) into seven series. While accepting Schott's subgenera, no attempt is made here to follow Engler's series.

Since the last revision of *Pothos* (Engler, 1905) several regional reviews have been published (e.g. Li, 1979; Sivadasan, 1982; Nicolson, 1988; Hay, 1995). To date no critical account of the genus has been prepared for Peninsular Malaysia (but see Hooker, 1893; Ridley, 1907, 1925), Borneo (but see Miquel, 1856; Ridley, 1905 and Merrill, 1921), the Philippines (but see Merrill, 1923) nor Thailand and Indochina (but see Gagnepain, 1942; Hu, 1968 and Boyce & Nguyen, 1995).

This review is based primarily on existing Thai, Chinese and Vietnamese collections and extensive fieldwork in Thailand, Vietnam and, to a lesser degree, China. The political situation in other parts of the region have necessarily limited greater study. By way of example the total number of *Pothos* collections located for Cambodia is four (representing two or three species), for Lao P.D.R. 14 (four species) and for Myanmar 36 (two species) from a total of 663 collections seen.

As with previous papers (Hay, 1995; Boyce & Hay, 1998) no attempt to group species other than at the level of subgenus (and that primarily for convenience, to aid identification) has been made. It is still far from clear whether *Pothos* as currently defined is a monophyletic genus (see Boyce & Hay, 1998 for discussion) and attempts to group species formally are premature pending current studies.

#### GEOGRAPHY

*Pothos* species in Thailand and Indochina fall into three distinct, though parapatric, geographical units (Boyce, 1996). Two of the 14 species, *P. chinensis* (Raf.) Merr. and *P. scandens* L., have a Indohimalayan distribution, occurring more or less continuously from the eastern Himalaya (as far west as Nepal) to southern China (east to Hong Kong and north to Hubei) and south to Peninsular Thailand. However, the distribution of *P. scandens* occurs throughout Indo-Malesia east to the Philippines and extends south and west to Madagascar.

Seven species [*P. dzui* P.C. Boyce, *P. gigantipes* Buchet ex P.C. Boyce, *P. grandis* Buchet ex P.C. Boyce & D.V. Nguyen, *P. kerrii* Buchet ex P.C. Boyce, *P. pilulifer* Buchet ex P.C. Boyce, *P. repens* (Lour.) Druce and *P. touranensis* Gagnep.] are restricted to Vietnam, Lao P.D.R., southern China and possibly Cambodia (*P. gigantipes*). Based on inflorescence morphology, relationships of outside the region appear to be with Javan *P. junghuhnii* de Vriese (*P. grandis*, *P. gigantipes*, *P. kerrii*, *P. pilulifer* and possibly *P. dzui*), the Malesian complex of *P. barberianus* Schott/*P. hosei* Rendle (*P. touranensis*) and Sulawesi/Philippines *P. cylindricus* C. Presl (*P. repens* and maybe *P. dzui*).

Four species (*P. kingii* Hook.f., *P. lorispatus* Ridl., *P. macrocephalus* Scort. ex Hook.f. and *P. curtisii* Hook.f.) occur widely in Peninsular Malaysia (*P. curtisii* and *P. macrocephalus* also reach Sumatera) but their range in the review area is restricted to the southernmost provinces of Peninsular Thailand where they are confined to limestone (*P. lorispatus*, *P. macrocephalus*) and granite (*P. kingii*, *P. curtisii*).

One species, *Pothos lancifolius* Hook.f., has a curious disjunct distribution with sites in Peninsular Malaysia and southern central Vietnam (where it has been called

hitherto *P. penicilliger* Gagnep.). Relationships with other species outside the area are not clear although an as yet undescribed species similar to *P. lancifolius* occurs in Borneo.

#### LIFE FORM

Observations suggest that most *Pothos* species are root climbers sensu Schimper (1903). However, it is nearly impossible to ascertain whether the plants remain in contact with the ground throughout their life cycle or whether for at least some of the time they lose contact with the ground, i.e. that they are hemi-epiphytes (see Putz & Holbrook, 1986; Croat, 1990).

Field observations suggest that the function of the eocaul (see Boyce & Hay, 1998) is to locate a climbing host on which to establish juvenile shoots. It is apparent that once this function is satisfied the eocaul soon withers. The question is unanswered whether the eocaul always dies before the juvenile shoot sends down feeder roots and re-establishes contact with the ground or whether there is a period when the plant is separated from the ground. If the latter, then many *Pothos* species should be classed as secondary hemi-epiphytes (see Putz & Holbrook, 1986).

Of species I have observed, *P. grandis* seems habitually to spend at least some of its life free from the ground and thus should be classed a secondary hemi-epiphyte. However, this observation is based on a very few plants in one area of limestone in which there were few sizeable trees. Habitat data for *P. grandis* from other localities suggest that degraded woodland on steep limestone is an atypical habitat for the species and thus my observations are based on an atypical set of ecological circumstances.

Part of the problem with life form observations is that it is seldom easy to trace a mass of interlaced adherent stems back to a single source of ground contact and virtually impossible to ascribe the points of ground contact to a particular time in the plant's development.

#### SHOOT ARCHITECTURE

Mature plants of *Pothos* display an interesting and at times bewildering range of shoot architecture. To date very few field observations have been made but from what has been done it is clear that some potentially useful systematic characters are present. Preliminary investigations of *Pothos* shoot architecture can be found in Boyce & Poulsen (1994), Boyce & Nguyen (1995) and Boyce & Hay (1998).

For *P. scandens* and *P. curtisii*, among the few species for which tolerably comprehensive shoot architecture observations exist, the following summary can be made. On germination both species produce an eocaul, a thread-like, cataphyll-bearing but otherwise leafless, skototropic (shade seeking, see Strong & Ray, 1975), physiologically monopodial (see Boyce, 1998) shoot. The eocaul is capable of extending for a considerable distance along the forest floor and although the green stem is presumably capable of photosynthesis, at least in the initial stages it appears to depend partly on food reserves in the large seed. Once a suitable vertical surface is encountered, the shoot alters its mode of growth and attaches itself to the substrate by means of short clasping roots arising from either the nodes and internodes; it can therefore be

termed a root-climber (see Schimper, 1903). At this stage the juvenile shoot also begins to produce foliage leaves. In *P. scandens* (subg. *Pothos*) these are similar to adult leaves in appearance, although more congested and smaller; the plant is thus homeophyllous. *Pothos curtisii* (subg. *Allopothos*) produces a juvenile root-climber with sub-orbicular imbricating leaves arranged in the manner of the tiles or shingles of a roof ('shingle-climber') and of very different appearance to leaves produced later in the life cycle; that species is thus heterophyllous.

Initially all branches produced are adherent. In *P. scandens* growth can continue in this manner for a considerable time, the adherent shoots climbing high into the canopy where conditions permit, giving rise to branches from older lower portions, but usually not branching distally unless the shoot tip is damaged. These adherent stems are referred to as 'mature sterile' in the descriptions to follow. By the time the plant has reached two or three metres non-adherent irregularly sympodial (i.e. terminating without flowering) side branches have usually begun to develop. These branches are plagiotropic, often repeatedly branching to form extensive curtains of foliage pendent under their own weight, and are referred to below as fertile shoots. It is from the leaf axils of these plagiotropic branches that the flowering shoots arise. The juvenile stage of *P. curtisii* behaves similarly to that of *P. scandens*, the major difference being that the shingle growth is of limited duration (usually climbing to no more than 3 metres, often considerably less) before the plant abruptly begins producing leaves of the adult form. The alteration to the adult form is often accompanied by extensive branching with both adherent and free shoots arising, the plant often forming a mass of interlacing branches ('hammock-forming').

Inflorescences of *P. scandens* are solitary and born terminally on non-reiterating short lateral flowering shoots bearing cataphylls but no foliage leaves. In other species (e.g. *P. curtisii*) these lateral shoots can be elaborated by sympodial branching into leafless, sometimes highly complex, compact or lax synflorescences (see Mayo et al., 1997) bearing two to many inflorescences simultaneously or sometimes single inflorescences in series (e.g. *P. lorispachus*, *P. lancifolius*). Synflorescences are usually borne along or at the end of leafy branches or, more rarely on older leafless parts of the stem, sometimes arising from there [e.g. Bornean and Philippines (Palawan) *P. insignis* Engl.; see Boyce & Poulsen, 1994]. Very occasionally inflorescences are solitary and terminal on leafy branches (e.g. *P. kingii*).

A feature of *P. curtisii* shared by a number of other species is the production of flagelliform, leafless (cataphyll-bearing), skototropic, 'foraging' shoots whose function appears to be to vegetatively propagate the individual by seeking and colonising suitable climbing surfaces. These foraging shoots can arise in a variety of positions but are most often seen at the tips of free or adherent branches.

Certain species (e.g. *P. repens*, *P. chinensis*) occasionally produce enormously robust reiteration shoots from older, usually leafless, parts of the plant. These shoots are notable not only for their size but also for the way in which the leaves are directed forwards and tightly imbricated and also in the mass of adherent roots that arise from them. Based on observations of *P. repens* in Vietnam, Boyce & Nguyen (1995) speculated that these reiteration shoots might serve as a means to rejuvenate ageing plants in which the quantity of high-climbing stems had become too great for the functioning root mass.

## POTHOS

*Pothos* L., Sp. Pl. (1753) 968; Sp. Pl. ed. 2 (1763) 1373, 1675; Lour., Fl. Cochin. (1790) 532; Schott in Schott & Endl., Melet. Bot. (1832) 21; Endl., Gen. Pl. 3 (1837) 239; Kunth, Enum. Pl. 3 (1841) 65; Schott, Aroid. (1856–1857) 21, t. 31–56; Gen. Aroid. (1858) 95; Prodr. Syst. Aroid. (1860) 558; Benth., Fl. Hongkong (1861) 344; Engl. in A. & C. DC., Monogr. Phanerogam. 2 (1879) 78; Benth. & Hook. f., Gen. Pl. 3 (1883) 999; Engl. in Engl. & Prantl, Nat. Pflanzenfam. 2, 3 (1889) 113; Nat. Pflanzenfam. Nachtr. 1 (1897) 58; Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 21; Engl. in Engl. & Prantl, Nat. Pflanzenfam. Nachtr. 3 (1908) 29; Gagnep. in Lecomte, Fl. Indo-Chine 6 (1942) 1082; F.C. How, Fl. Kwangchow (Canton = Guangzhou) (1956) 693; P.H. Hồ, Cây-co Miền Nam Việt-nam [Fl. South Vietnam – in Vietnamese] (1960) 690, pl. 267, p.p.; S.Y. Hu, Dansk Bot. Arkiv 23, 4 (1968) 413; Chun, Fl. Hainan. 4 (1977) 130; C.Y. Wu & H. Li, Fl. Yunnan. 2 (1979) 740; H. Li in C.Y. Wu & H. Li, Fl. Reip. Popul. Sin. 13, 2 (1979) 15, pl. 3; J. Zhong, Ill. Limestone Mount. Pl. Guangxi (1982) 291; M.L. Sai in Y.K. Li et al., Fl. Guizhou. 6 (1987) 545; P.H. Hồ, Câyco Việtnam [Ill. Fl. Vietnam – in Vietnamese and English] 3, 1 (1993) 420, pl. 8251–8262. — Type species: *Pothos scandens* L.

*Tapanava* Adans., Fam. 2 (1763) 470, nom. illeg. — Type: Based on the same type as *Pothos*.

*Goniurus* C. Presl, Epimel. Bot. (1851, '1849') 244. — Type species: *Goniurus luzonensis* C. Presl [= *Pothos luzonensis* (C. Presl) Schott].

[*Potha* Kuntze, Rev. Gen. 2 (1891) 742, orth. var.]

Small to very large, very slender to robust, probably rarely secondarily hemi-epiphytic (see Croat, 1990; Putz & Holbrook, 1986), root climbing, homeo- or heterophyllous, tough, fibrous lianes, usually with clearly differentiated, adherent, physiognomically monopodial (see Boyce, 1998) non-flowering and free, sympodial or physiognomically monopodial flowering shoots, the latter often highly ramified. Seedling, where known, a cataphyll-bearing but otherwise leafless, photosynthesising thread-like eocaul. Adult plants often producing flagelliform, leafless (cataphyll-bearing), skototropic, foraging shoots. Juvenile plants sometimes shingle-leaved (subg. *Allopothos*; juveniles not described for most species nor yet reported for many Thai and Indochinese *Pothos*); internodes (except at the beginning of branches) much longer than thick, nodes on free shoots occasionally bearing spines [modified rudimentary roots according to Hay (1995)], this feature absent from species in review area. Leaf blades simple, entire, very narrowly lanceolate to broadly ovate, often asymmetrical (subg. *Allopothos*), with reticulate venation, the primary lateral veins on each side of the midrib traversed by one or more intramarginal veins running  $\pm$  from the base and from about midway along the midrib to the apex or first to the distal margins and then to the apex; petiole either with a narrow,  $\pm$  clasping sheath and a conspicuous apical geniculum (subg. *Allopothos*), or broad, flattened and lamina-like with a small apical articulation (subg. *Pothos*), the leaf then resembling that of some *Citrus*. Inflorescences occasionally solitary and terminal on leafy branches, more usually arranged on lateral short shoots bearing cataphylls, the short shoots usually simple with a single inflorescence, sometimes elaborated by sympodial branching into usually leafless, sometimes highly complex, compact or lax synflorescences bearing two to many inflorescences flowering in series, synflorescences borne along or at the end of leafy branches or, when present, on older leafless parts of the stem, sometimes arising from there; spathe mostly rather inconspicuous (exceptions in the review area include, e.g., *P. kingii*), ovate to lorate, opening wide and held away from the spadix, often fully reflexed, green to dirty white or yellow or deep purple; spadix sessile or stipitate, tapering-cylindrical to

spherical. Flowers bisexual, with a perianth of usually 6, rarely 4, free tepals or the perianth completely united and the flowers sunken in pits on the spadix with the perianth resembling a centrally perforated operculum over the pit (this condition not occurring in the review area). *Stamens* 6, rarely 4, with flattened filaments and extrorse anthers, thecae elongate to globose. *Ovary* trilocular, the locules uniovulate, ovules anatropous on an axile placenta at the base of the septum; stigma punctiform, discoid-hemispheric or umbonate, mostly sessile. Fruit a 1–3-seeded berry ripening from dark green through yellow to variously red, individually distinct and, relative to spadix, very large. Seed large, exalbuminous, testa smooth; embryo macropodal.

Pollen monosulcate, ellipsoid-oblong, small [mean 21  $\mu\text{m}$ , range 16–25  $\mu\text{m}$  (Grayum, 1984)], exine foveolate to reticulate or subrugulate, muri-pilulate or minutely tuberculate.  $2n = 24, 36$  (Petersen, 1989).

Distribution — Approximately 70 species distributed from Madagascar to Vanuatu and from China (as far north as Hubei) to Australia (as far south as New South Wales).

Habitat — Bole climbing, occasionally lithophytic, root-climbing lianes or rarely secondary hemi-epiphytes in low to upper-mid-elevation tropical or subtropical seasonal to perhumid evergreen forest.

#### KEY TO POTHOS SPECIES IN THAILAND AND INDOCHINA

- 1a. Leaf with petiole expanded and flattened, the leaf resembling that of many *Citrus* ..... 2
  - b. Leaf with petiole slender, canaliculate ..... 11
- 2a. Stipe of spadix sharply bent at anthesis, fertile portion of spadix held adjacent to peduncle ..... **9. *P. scandens***
  - b. Stipe of spadix  $\pm$  straight at anthesis ..... 3
- 3a. Fertile portion of spadix long slender-cylindrical; often slightly tortuose; leaves of flowering shoots with petiole at least eight times longer than lamina ..... **8. *P. repens***
  - b. Fertile portion of spadix globose, obtuse-ellipsoid or stout cylindrical, if stout cylindrical then straight and leaves of flowering shoots with petiole shorter than lamina ..... 4
- 4a. Spadix stout cylindrical. — Central Vietnam ..... **2. *P. dzui***
  - b. Spadix globose to obtuse-ellipsoid; various localities ..... 5
- 5a. Stipe of spadix short (no more than twice as long as fertile portion of spadix) 6
  - b. Stipe of spadix long (more than three times as long as fertile portion of spadix) ..... 7
- 6a. Flowering shoots arising at many leaf axils along long pendent fertile shoots, inflorescences thus often very numerous; spathe purple, fertile portion of spadix cream ..... **9. *P. scandens***
  - b. Flowering shoots arising at only the distal-most leaf axils of short spreading fertile shoots, inflorescences thus rather few; spathe green, fertile portion of spadix white to yellow ..... **1. *P. chinensis***
- 7a. Fertile portion of spadix very small (5 mm diam. or less at anthesis) ..... 8
  - b. Fertile portion of spadix moderate to large (10 mm diam. or more at anthesis) 9

- 8a. Peduncle 25–40 by 0.5–1 mm, slender; stipe 10–18 by 0.23–0.75 mm, very slender ..... 5. *P. kerrii*
- b. Peduncle 0–3(–5) by c. 1 mm, stout; stipe 10–12 by 1–1.25 mm, stout ..... 7. *P. pilulifer*
- 9a. Spathe white, fertile portion of spadix yellow. — Peninsular Thailand, central and southern Vietnam, ?Cambodia ..... 10
- b. Spathe green, fertile portion of spadix purple. — North Vietnam, ?China .... 4. *P. grandis*
- 10a. Petiole twice or more the length of lamina, bright to mid-green, congested-distichous; juvenile stage with weakly angled to subterete stems, leaves bright green, spreading to loosely appressed to substrate. — Peninsular Thailand ..... 6. *P. macrocephalus*
- b. Petiole half or less the length of lamina, grey-green, spaced out; juvenile stage with compressed, winged, rectangular stems, leaves blue- to grey-green, tightly appressed to substrate. — Central and southern Vietnam, ?Cambodia ..... 3. *P. gigantipes*
- 11a. Spadix with flowers densely clustered, the whole appearing uniformly cylindrical ..... 12
- b. Spadix with flowers scattered along a slender axis ..... 10. *P. curtisii*
- 12a. Spathe deeply cucullate, deep purple; inflorescence carried below the flowering shoot on a sharply deflexed peduncle ..... 11. *P. kingii*
- b. Spathe never as above; inflorescence variously oriented ..... 13
- 13a. Spathe lorate, mid-green; spadix stipitate; peduncle less than 60 mm long ... 13. *P. lorispathus*
- b. Spathe lanceolate to triangular, variously coloured; spadix sessile or stipitate, if stipitate then peduncle more than 100 mm long ..... 14
- 14a. Peduncle 15–50 mm; spathe lanceolate, 25–100 by 10–40 mm; spadix sessile ..... 12. *P. lancifolius*
- b. Peduncle 100–190 mm; spathe triangular, 60–90 by 15–20 mm; spadix stipitate ..... 14. *P. touranensis*

MULTI-ACCESS KEY TO POTHOS IN THAILAND AND INDOCHINA

(adult plants only)

*Petiole*

- Expanded and flattened, leaf resembling that of many *Citrus* ..... 1. *P. chinensis*,  
2. *P. dzui*, 3. *P. gigantipes*, 4. *P. grandis*, 5. *P. kerrii*  
6. *P. macrocephalus*, 7. *P. pilulifer*, 8. *P. repens*, 9. *P. scandens*
- Slender, canaliculate ..... 10. *P. curtisii*, 11. *P. kingii*, 12. *P. lancifolius*,  
13. *P. lorispathus*, 14. *P. touranensis*

*Inflorescence*

- Large, pale or sombre coloured ..... 2. *P. dzui*, 4. *P. grandis*, 8. *P. repens*,  
10. *P. curtisii*, 13. *P. lorispathus*, 14. *P. touranensis*
- Large, brightly coloured ..... 3. *P. gigantipes*, 6. *P. macrocephalus*, 11. *P. kingii*
- Small ..... 1. *P. chinensis*, 5. *P. kerrii*, 7. *P. pilulifer*,  
9. *P. scandens*, 12. *P. lancifolius*

***Peduncle***

- Notably long, stout ..... 2. *P. dzui*, 3. *P. gigantipes*, 4. *P. grandis*,  
6. *P. macrocephalus*, 8. *P. repens*, 9. *P. scandens*,  
10. *P. curtisii*, 12. *P. lancifolius*, 13. *P. lorispatus*, 14. *P. touranensis*
- Notably long, very slender ..... 5. *P. kerrii*
- Short to absent (or nearly so) ..... 1. *P. chinensis*, 7. *P. pilulifer*, 9. *P. scandens*

***Stipe***

- Short to absent (or nearly so) ..... 1. *P. chinensis*, 4. *P. grandis*, 8. *P. repens*,  
9. *P. scandens*, 10. *P. curtisii*, 11. *P. kingii*,  
12. *P. lancifolius*, 13. *P. lorispatus*
- Stout, straight or flexuous at anthesis ..... 2. *P. dzui*, 3. *P. gigantipes*,  
6. *P. macrocephalus*, 7. *P. pilulifer*, 10. *P. curtisii*,  
13. *P. lorispatus*, 14. *P. touranensis*
- Very slender, straight or flexuous at anthesis ..... 5. *P. kerrii*
- Sharply bent at anthesis ..... 9. *P. scandens*

***Spadix***

- Fertile portion of spadix cylindrical ..... 2. *P. dzui*, 8. *P. repens*, 10. *P. curtisii*,  
11. *P. kingii*, 12. *P. lancifolius*, 13. *P. lorispatus*, 14. *P. touranensis*
- Fertile portion of spadix globose to ovoid ..... 1. *P. chinensis*, 3. *P. gigantipes*,  
4. *P. grandis*, 5. *P. kerrii*, 6. *P. macrocephalus*, 7. *P. pilulifer*, 9. *P. scandens*

***Flowers***

- Congested on the spadix ..... 1. *P. chinensis*, 2. *P. dzui*, 3. *P. gigantipes*,  
4. *P. grandis*, 5. *P. kerrii*, 6. *P. macrocephalus*, 7. *P. pilulifer*,  
8. *P. repens*, 9. *P. scandens*, 11. *P. kingii*, 12. *P. lancifolius*,  
13. *P. lorispatus*, 14. *P. touranensis*
- Widely scattered on the spadix ..... 10. *P. curtisii*

**Thai and Indochinese *Pothos* species arranged by country:**

- Cambodia: 1. *P. chinensis*, ?3. *P. gigantipes*, 9. *P. scandens*
- China: 1. *P. chinensis*, ?4. *P. grandis*, 7. *P. pilulifer*, 8. *P. repens*, 9. *P. scandens*
- Lao P.D.R.: 1. *P. chinensis*, 5. *P. kerrii*, 8. *P. repens*, 9. *P. scandens*
- Myanmar: 1. *P. chinensis*, 9. *P. scandens*
- Taiwan: 1. *P. chinensis*
- Thailand: 1. *P. chinensis*, 6. *P. macrocephalus*, 9. *P. scandens*, 10. *P. curtisii*,  
11. *P. kingii*, 13. *P. lorispatus*
- Vietnam: 1. *P. chinensis*, 2. *P. dzui*, 3. *P. gigantipes*, 4. *P. grandis*, 5. *P. kerrii*,  
7. *P. pilulifer*, 8. *P. repens*, 9. *P. scandens*, 12. *P. lancifolius*,  
14. *P. touranensis*

**Subgenus *Pothos***

- Pothos* subg. *Eupothos* Schott, Aroideae (1856–1857) 21.
- Pothos* sect. *Eupothos* Engl. in A. & C. DC., Monogr. Phanerogam. 2 (1879) 27.
- Pothos* ser. *Scandentes* Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 22.
- Pothos* ser. *Papuani* Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 22.
- Pothos* ser. *Loureiriani* Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 22.
- Pothos* ser. *Longipedes* Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 22.



**1. *Pothos chinensis* (Raf.) Merr. — Fig. 1a, 1b**

*Pothos chinensis* (Raf.) Merr., J. Arnold Arbor. 24 (1948) 210; F.C. How, Fl. Kwangchow [Canton = Guangzhou] (1956) 693; Chun, Fl. Hainan. 4 (1977) 130; C.Y. Wu & H. Li in C.Y. Wu & H. Li, Fl. Yunnan. 2 (1979) 742, pl. 208, 8; H. Li in C.Y. Wu & H. Li, Fl. Reip. Popul. Sin. 13, 2 (1979) 19, pl. 3, 10; M.L. Sai in Y.K. Li et al., Fl. Guizhou. 6 (1987) 546, pl. 161, 1. — *Tapanava chinensis* Raf., Fl. Tellur. 4 (1837) 14. — Type: Bot. Reg. 16 (1830) pl. 1337.

*Pothos seemannii* Schott, Aroid. 22 (1856–1857) 22, t. 43; Bonplandia 5 (1857) 45. — Neotype designated here: China, Hong Kong, *Champion s.n.* (K). In describing *P. seemannii* Schott did not explicitly cite any specimens although later (Schott, 1860) cited material from Seemann's herbarium without specifying collector or number. Typification of Schott names for which no specimens are extant on illustrations in the Icones Aroideae is often practised but I prefer to follow Grayum (1996: 4) in utilising Icones Aroideae illustrations as a means to identify herbarium specimens seen by Schott. Among the Icones Aroideae there is a plate of *P. seemannii* [Icones Aroideae 2869 (W); Schott, 1983] on which the short robust flowering branch, fruiting spadix and inflorescence cataphyll details depicted are a perfect match for the Kew *Champion* specimen cited above. The specimen [presumably in Seemann's herbarium] used for the long slender flowering branch depicted in the same Icones is yet to be traced.

*Pothos cathcartii* Schott, Aroid. (1858) 22, t. 44, 45 (as '*cathcartii*'), syn. nov. — Type: India, Sikkim, April 1850, *Cathcart s.n.* sub *Hooker s.n.* (fl.) (holo K).

*Pothos warburgii* Engl., Bot. Jahrb. Syst. 25 (1898) 2, syn. nov. — Neotype designated here: The holotype (Taiwan, Kuanania, *Warburg 10663*) at B is missing, presumed destroyed. The isotype at the BM is also missing, with only the torn labels remaining in a capsule mounted on *Warburg 9697*. Based on Engler's protologue and illustration (presumably based on the missing holotype since Engler cites no other specimen) and supported by numerous other collections seen from Taiwan, *P. warburgii* is nothing more than a slender-leaved form of *P. chinensis* and is here neotypified accordingly.

*Pothos balansae* Engl., Bot. Jahrb. Syst. 25 (1898) 3, syn. nov. — Type: Vietnam, Mt Bavi, Lankok valley, *Balansa 2060* (holo P; G, K, LE).

*Pothos yunnanensis* Engl. in Engl., Pflanzenz. 21 (IV.23B) (1905) 28. — Type: China, Yunnan, Szemao, *Henry 11779* (holo B†; E, GH, K, US).

*Pothos chinensis* (Raf.) Merr. var. *lotienensis* C.Y. Wu & H. Li, Acta Phytotax. Sin. 15 (1977) 101, syn. nov. — Type: China, Guizhou, Luodiang, *Qian-nan Team 731* (holo KUN).

[*Pothos yunnanensis* Engl. var. *bonii* Buchet, nom. nud. in sched. P.]

*Pothos scandens* auct. non L.: Benth., Fl. Hongkong (1841) 345.

Small to very large, slender to robust, homeophyllous root-climbing liane to 10 m. Eocaul not observed; stem of juvenile shoot to 4 mm diam., weakly angled or terete in cross section, leaves congested; stem of mature sterile shoot to 12 mm diam., weakly 4-angled, slightly compressed or terete in cross section, mid-green, becoming greyish brown with age, at first somewhat densely clothed with leaves, early growth often with all leaves directed forwards and the whole appearing imbricated, later growth with leaves spreading, stems eventually becoming naked, naked portions with prominent, 70 mm distant nodes; fertile shoot often branching to three or more orders, stem to 5 mm diam., terete to weakly or somewhat prominently angled in cross section, angles occasionally minutely winged, mostly densely clothed with leaves, older portions naked at the base to approximately half their length, naked portions with prominent nodes to 30 mm distant; foraging shoot subterete in cross section, to 2 mm diam., proximally with a few oblong cataphylls and reduced foliage-leaves but soon becoming naked with slightly prominent nodes to 150 mm distant. *Leaves* when fresh bright to mid-green adaxially, paler abaxially, air drying dull green to brownish; petiole 0.5–140 by 4–20 mm, broadly winged, obovate-oblong to linear-oblong or elongate-



Fig. 1a. *Pothos chinensis* (Raf.) Merr. a. Flowering shoots and portion of adherent stem; b. inflorescence; c. detail of spadix; d. mature sterile shoot (a: *Boyce 1146*; b–d: *Boyce 983*). — Scale bar to a = 160 mm; to b = 1 mm; to c = 2 mm; to d = 40 mm.

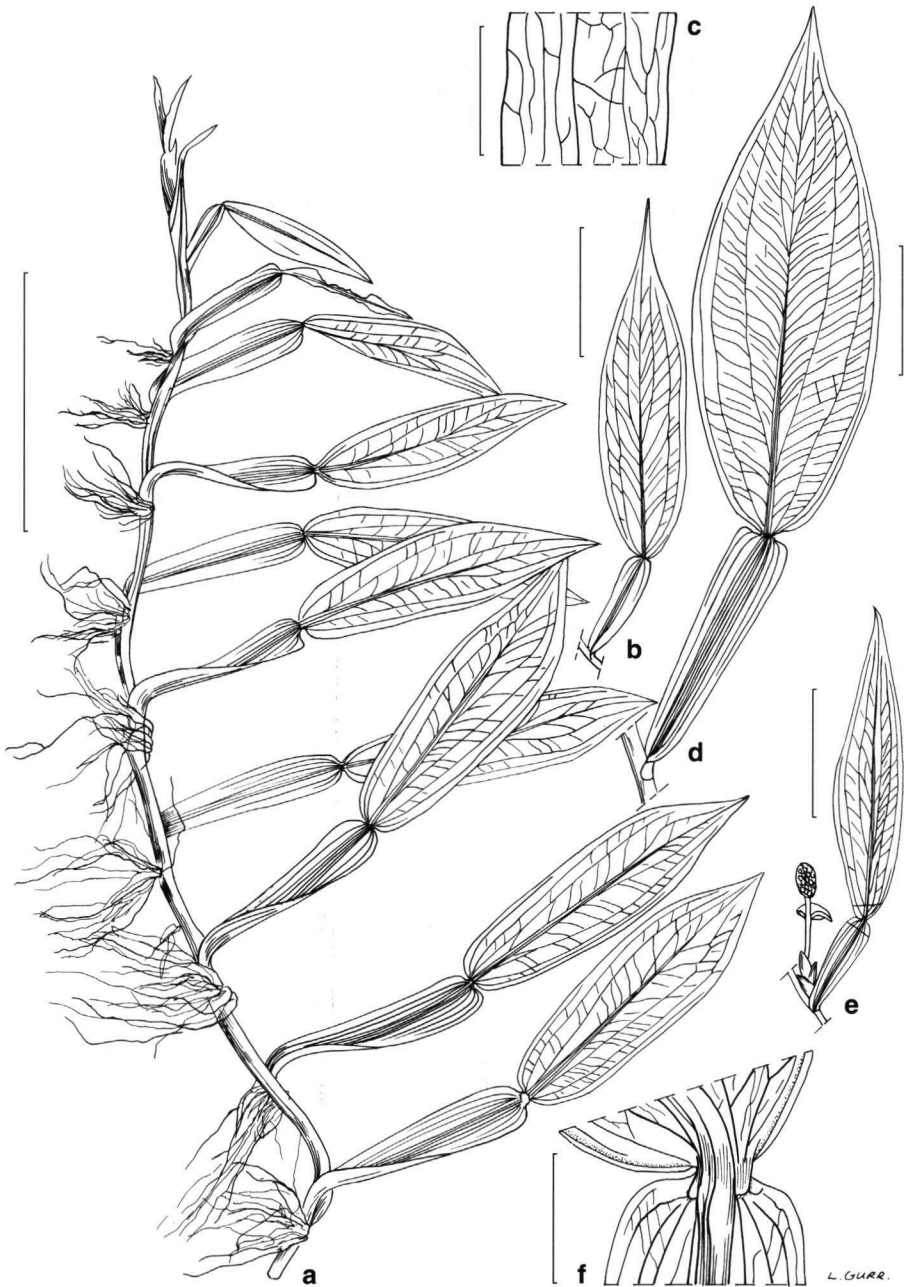


Fig. 1b. *Pothos chinensis* (Raf.) Merr. a. Mature sterile shoot; b. whole leaf; c. venation detail; d. whole leaf; e. flowering shoot and associated leaf; f. detail of junction of lamina and petiole (a: Boyce 983; b & c: Lacey 5112; d: Tsang 27239; e & f: Forrest 26578). — Scale bar to a = 160 mm; to b & e = 40 mm; to c & f = 5 mm; to d = 30 mm.

triangular, with 2 or 3 secondary veins and numerous veinlets per side, all veins prominent, especially in dried material, base decurrent to clawed, apex truncate, rounded or auriculate; lamina 30–205 by 15–205 mm, ovate to elliptic or lanceolate with 2–4 intramarginal veins per side, these arising from the base and either immediately diverging or remaining very close and parallel to midrib and then diverging further along lamina, either reaching the leaf tip or merging into a prominent submarginal collecting vein, additional veins arising obliquely from the midrib, remaining parallel with numerous veins arising from them, base rounded to acute, apex attenuate-mucronate to acute or attenuate, minutely tubulate. *Flowering shoot* much abbreviated, arising from most of the mid- to distal leaf axils of fertile shoots, bearing a minute prophyll and a few 3–15 mm, sequentially longer, cataphylls. *Inflorescence* solitary or in pairs; peduncle 3–25 by 1.5–2.5 mm, rather stout, erect to variously curved, green to brown-tinged; spathe 4–12 by 4–10 mm, ovate, concave, margins inrolled, base cordate, clasping and slightly decurrent on the peduncle, apex fornicate to recurved, acute to subacute with a rather stout mucro, greenish white to green, occasionally faintly purple-tinged, somewhat waxy; spadix stipitate; stipe 5–10 by 1–1.25 mm, terete in cross section, erect, straight, green; fertile portion 3.5–13 by 3–10 mm, globose to ovoid, pale green to white. *Flowers* c. 1–2 mm diam.; tepals 1 by 0.3 mm, oblong-cymbiform, yellow-green to dirty white, apex fornicate, triangular, truncate. *Stamens* 1–4 by c. 0.5 mm, filaments strap-shaped, thecae c. 0.2 mm diam., yellow. *Ovary* 1–1.5 by 0.25–0.75 mm, compressed angular-ellipsoid, yellow-green to dirty white; stylar region truncate; stigma punctiform. *Infructescence* with 1–5 berries; fruit 10–17.5 by 10–14 mm, obclavate to ovoid or ellipsoid, mid-green ripening to scarlet, often with basal chartaceous tepal remains. *Seeds* c. 3–6 mm diam., ellipsoid to compressed-globose.

*Distribution* — India (Arunchal Pradesh, Assam, Manipur, Nagaland, Orissa, Sikkim, Tripura, West Bengal), Nepal, Bhutan, Bangladesh, Myanmar, China (Guangdong, Guangxi, Guizhou, Hainan, Hong Kong, Hubei, Macao, Sichuan, Yunnan), Thailand, Cambodia, Lao P.D.R., Vietnam, Taiwan.

*Habitat & Ecology* — On rocks and trees and in clearings in tropical or subtropical primary or disturbed lowland wet or dry evergreen forest, rain forest, hill evergreen forest, wet upper hill to lower montane forest, ravines, in dry thickets and orange orchards, sometimes in association with tall grasses and bamboo on sandstone, limestone, granite, clay, loam or sandy soil; altitude 250–2970 m.

*Vernacular names* — Cag kheb (Thailand: Chiang Mai), Tun wa (Thailand: Chiang Mai), Hmab Ntsua Nees (Thailand: Nan, Hmong dialect), Wai Ta-kep (Thailand: Chiang Mai).

*Ethnobotany* — Thailand: used fresh and applied topically on insect and animal bites [Brun *et al.* 502 (C)]; entire plant as a decoction in bath to treat tumours [Brun *et al.* 704 (C)]; plant boiled and the liquid drunk for cough [Anderson 5572 (GH)].

*Notes* — The differences cited by Engler (1905) and Gagnepain (1942) between *P. chinensis*, *P. yunnanensis*, *P. balansae* and *P. cathcartii* concern the shape and dimensions of the fertile portion of the spadix. Study of numerous herbarium specimens and of living plants in the field demonstrates that these distinctions are unreliable.

The name *P. chinensis* has been applied to slender climbers with a short petiole (less than one third as long as leaf lamina) and small inflorescences with a prominent stipitate spadix. Many of the collections agreeing with *P. chinensis* s.s. (i.e. sensu

Engler, 1905) are from Hong Kong and Taiwan. However, numerous collections from mainland China and further afield blur these differences and, occasionally, different duplicates of the same collection have been identified as separate species depending on their robustness.

*Pothos cathcartii* is dimensionally in the mid-range of the complex with generally medium sized inflorescences, and leaves with the petiole and lamina approximately equal in length. However, the isotype of *P. cathcartii* in K has a branch with individual inflorescence dimensions matching both *P. yunnanensis* and *P. cathcartii*.

The names *P. yunnanensis* Engl. and *P. balansae* Engl. have been applied to robust specimens. The isotype of *P. yunnanensis* at K is an exceptionally robust specimen with leaf laminae in excess of 200 mm long and several stout inflorescences each carried on a 20 mm long peduncle. However, the isotype in GH is decidedly smaller in stature and bears inflorescences whose dimensions fit well *P. cathcartii* s.s. Engler (1905) distinguished *P. balansae* by the oblong fertile portion of the spadix. The types of *P. balansae* in P and K are in young fruit, the spadices distorted by the enlarging ovaries. During fieldwork on Ba Vi (the type locality of *P. balansae*) in 1994 and 1997, I observed plants on which, depending on the age of the inflorescences, different branches could be matched to 'typical' *P. chinensis* or *P. cathcartii* or *P. balansae*. There is a continuum between the four species as defined by Engler and none can be satisfactorily separated from another. The oldest name, *P. chinensis*, is therefore adopted.

As noted in the synonymy above, *P. warburgii* Engl., described from Taiwan, is a narrow-leaved form of *P. chinensis*.

Confusion can occur between *P. scandens* and *P. chinensis*. In flower *P. chinensis* is immediately recognizable by the straight, not bent, stipe and the generally larger, paler, fewer, more scattered inflorescences. Additionally, *P. scandens* produces solitary inflorescences whereas *P. chinensis* frequently produces inflorescences in pairs. Generally *P. scandens* has flowering shoots arising at many of the leaf axils of long pendent fertile shoots, thus there are often numerous inflorescences. By contrast *P. chinensis* tends to produce flowering shoots at only the distal-most leaf axils of short spreading fertile shoots, thus inflorescences are rather few. Inflorescence colours also differ; purple spathe and cream fertile spadix in *P. scandens*, green spathe and white to yellow fertile spadix in *P. chinensis*. Field observations have detected a faint but sweet odour from inflorescences of *P. chinensis* but no detectable odour from *P. scandens*.

Sterile material of *P. chinensis* can be difficult to differentiate from *P. scandens*. Generally the petioles are less than half as long as the lamina, and the lamina is twice or more as broad as the petiole, narrower and with an attenuate apex. However, variation is such that intermediates are common. A feature noted in *P. chinensis*, but yet to be recorded for *P. scandens*, is the occurrence of flagelliform foraging shoots.

*Geographically representative selection of collections studied:*

CHINA: Guangdong: Ting Wu Shan, 7 May 1928, *W.Y. Chun 6458* (fl.) (GH). – Guangxi: Loh Hoh Tsuen, Ling Yun Hsien, 1933, *Steward & H.C. Cheo 62* (fl.) (GH, P). – Guizhou: *Esquirol 70* (K). – Hong Kong: New Territories, Tai Mo Shan, 10 Oct. 1969, *S.Y. Hu 8121* (fl.) (GH, K). – Hubei: Ichang, Nan-to Mts, May 1888, *Henry 4395* (fl.) (GH, K). – Hainan: Bo Ting, 21 Oct. 1936, *S.K. Lau 28069* (fl.) (GH). – Macao: 1844, *Callery 195* (K, P). – Sichuan: Omei Shan, 8 Aug. 1938, *C.Y. Chiao & C.S. Fan 254* (fl.) (GH). – Yunnan: Meng-soong, Dah-meng-lung, Che-li Hsien, Sept. 1936, *C.W. Wang 78408* (fl.) (GH).

LAO P.D.R.: Khammouan: Phou Phoung, 2 March 1932, *Poilane 20278* (fl.) (P). — Louangphrabang: Phou Ngoi, near Louangphrabang, 2 April 1932, *Poilane 20612* (fl.) (P). — Xieng Khouang: Between La Mine and Nadin, April 1949, *Vidal 917* (fl.) (SAI).

MYANMAR: Kachin: Sumprabum, eastern approaches from Sumprabum to Kumon range, between Mache Ga and Sumprabum, N 026° 40', E 097° 20', 23 Jan. 1962, *Keenan et al. 3381* (fl.) (GH, K). — Sagaing: Katha, Kadu Hill, 23 Feb. 1916, *Lace 5112* (fl.) (K).

TAIWAN: Nantou Hsien, Chitou, San-cha-lun, 17 Feb. 1960, *T.I. Chuang & M.T. Kao 3259* (fl.) (GH).

THAILAND: N2. Chiang Mai: Doi Inthanon, trail just past check point 2, km32 on road to summit, 20 Sept. 1994, *Boyce 983* (fl.) (BKF, K and K Spirit Coll. no. 59590). — N5. Nan: Doi Phukha N.P., by roadside to summit, N 019° 10', E 100° 06', 22 Sept. 1996, *Boyce 1124* (fl.) (BKF, K, TCD). — N8. Phrae: Mae Khaem, N 018° 07', E 100° 09', 2 Jan. 1972, *Van Beusekom et al. 4659* (fl.) (BKF, C, K, L). — N10. Tak: Doi Pae Poe, about 90 km NW of Tak, 14 March 1968, *Hansen & Smitinand 12909* (fl.) (BKF, C). — N12. Phitsanulok: So Pah, waterfall west of Tung Salaeng Luang, 22 July 1966, *Larsen et al. 713* (fl.) (BKF). — NE16. Petchabun: Nam Nao N.P., trail west from visitor centre, 23 Sept. 1994, *Boyce 1012* (fl.) (BKF, K). — NE17. Loei: Dong Phrab Pran, Phu Rua N.P., N 017° 28', E 101° 18', 5 March 1993, *Chantaranothai et al. 1087* (fl.) (BKF, K, Kku, TCD). — E28. Nakhon Ratchasima: Khao Yai N.P., near old forest station, 14 March 1968, *Van Beusekom & Phengkhai 51* (fl.) (BKF). — SW37. Kanchanaburi: Sai Yok, 18 Dec. 1961, *Larsen 8810* (fl.) (GH). — C47. Saraburi: Kaeng Khoi, Than Pra Photisat, 7 Oct. 1979, *Shimizu et al. 19394* (fl.) (BKF). — SE57. Prachin Buri: Ban Bung hills, 2 Aug. 1966, *Larsen et al. 1137* (fl.) (AAU, BKF, GH). — SE61. Chantaburi: Kao Satap, 7 Jan. 1930, *Kerr 17999* (fl., fr.) (BK, K, L, P). — PEN66. Phangnga: Kao Bangto, 22 Feb. 1929, *Kerr 17187* (fl.) (BK, K, P).

VIETNAM: Cao Bang: Tra Linh, Quoc Toan, near Thang Heng lake in environs of Thang Heng and Lung Tao villages, 4 Jan. 1996, *Averyanov et al. VH 2472* (fl.) (HN). — Ha Tay: Bavi, Lan Kok Valley, N 022° 27', E 105° 01', 16 April 1888, *Balansa 2060* (fl.) (type of *Pothos balansae* Engl. holo P; K). — Khanh Hoa: Lung Van, 26 Jan. 1931 (fl.) *Poilane 18922* (P). — Kon Tum: Dak Glai, 26 March 1968, *Nguyen Kim Dao 161* (fl.) (HN). — Lai Chau: Dien Bien Phu, Muong Fang, 3 June 1961, *Soviet-Vietnam Expedition 2427* (fl.) (LE). — Lang Song: Van Linh, Feb. 1938, *Pétiot 2286* (fl.) (GH, SAI). — Nghe An: Quy Chan, 25 Aug. 1963, *Trinh Xuan Mai 737* (fl.) (HN). — Ninh Binh: Cuc Phuong N.P., c. 100 km SW of Hanoi, N 20° 16', E 105° 40', 7 March 1997, *Boyce 1164* (fl.) (HN, K and K Spirit Coll. no. 63241.005, M). — Quang Nam—Da Nang: Ba Ma, near Da Nang, 2 March 1939, *Poilane 29197* (fl.) (P). — Quang Ninh: Vicinity of Ting Wu Shan, Chuk Phai, Ha Coi, 10–17 Nov. 1936, *W.T. Tsang 27239* (fl.) (C, GH, K, P). — Quang Tri: Dong Che, near Quang Tri, 24 May 1924, *Poilane 10569* (fl.) (P). — Thai Binh: Kieu Son, 26 Jan. 1961, *Soviet-Vietnam Expedition 1722* (fl.) (LE). — Tuyen Quang: Ha Tuyen, Na Hang, Vinh Yen, Khao Phung, trail between Ban Chou and Nam Ban, N 022° 21' 04", E 105° 25' 35", 6 March 1994, *Harder et al. 2351* (fl.) (HN, MO, US). — Vinh Phu: Tam Dao, ridge of Tam Dao above hill station, 25 Aug. 1994, *Boyce 819* (fl.) (HN, K).

## 2. *Pothos dzui* P.C. Boyce, *spec. nov.* — Fig. 2

*Pothos dzui* pedunculo longo, spatha pro ratione parva et stipite longo *P. grandem* arcte simulans, sed ab eo spadice crasso cylindrico inaeque in stipite prominenti longe decurrenti atque spatha valde reflexa facile separetur; *P. cylindricum*, speciem Philippinensem, praeterea spadice cylindrico simulans, sed ab ea lamina late elliptica atque petiolo brevi distinguitur. — Typus: Vietnam, Gia Lai, Mangyang, Chui Ta Moi, *Nguyen Thi Nhan 532* (holo HN).

Robust, (homeophyllous?), root-climbing liane of unknown ultimate height. Eocaul, juvenile shoot and mature sterile shoot not observed; stem of fertile shoot to 5 mm diam., terete to somewhat angled in cross section. Leaves drying pale brown; petiole 10–55 by 2–10 mm, broadly winged, obovate-oblong to oblong-triangular, with 2 or



Fig. 2. *Pothos dzui* P.C. Boyce. a. Fertile shoot; b. whole leaf; c. detail of junction of lamina and petiole; d. venation detail; e. inflorescence; f. detail of spadix (a–f: *Nguyen Thi Nhan 532*). — Scale bar to a = 80 mm; to b = 30 mm; to c & e = 10 mm; to d = 5 mm; to f = 1 mm.

3 secondary veins and numerous veinlets per side, all veins prominent, especially in dried material, base decurrent, apex truncate, rounded or very slightly auriculate; lamina 30–70 by 90–170 mm, elliptic to ovate with 2–4 intramarginal veins per side, these arising from the base and immediately diverging and then reaching the leaf tip, additional veins arising obliquely from the midrib, remaining parallel with numerous veins arising from them, base rounded to acute, apex attenuate-mucronate to acute or attenuate, minutely tubulate. *Flowering shoot* much abbreviated, arising from the proximal leaf axils of fertile shoots, bearing a minute prophyll and a few 3–10 mm, sequentially longer, cataphylls. *Inflorescence* solitary; peduncle 40–55 by 1.5–2 mm, rather stout, erect, twisting basally to present the inflorescences above the flowering shoot; spathe 17–20 by c. 20 mm, narrowly ovate, concave, prominently parallel-veined in dry material, margins strongly inrolled, base shallowly, cordate, clasping and decurrent on the peduncle, apex acute with a stout mucro; spadix stipitate; stipe c. 22 by 2 mm, terete in cross section, erect, straight; fertile portion 25–30 by 5–7 mm, stoutly cylindrical, bluntly rounded, unequally long-decurrent on the stipe. *Flowers* c. 1 mm diam.; tepals 1 by 0.3 mm, oblong-cymbiform, apices fornicate, triangular, truncate. *Stamens* 1–2 by c. 0.25 mm, filaments strap-shaped, thecae c. 0.2 mm diam. *Ovary* 1–1.5 by 0.25–0.75 mm, compressed ellipsoid; stylar region truncate; stigma punctiform, margins slightly expanded.

Distribution — Vietnam.

Habitat & Ecology — Unknown.

Notes — *Pothos dzui* is a remarkable species known from a single collection of a solitary mature flowering branch with two mid-anthesis inflorescences. The inflorescence morphology (long peduncle, relatively small spathe and long stipe) is reminiscent of *P. grandis* from which *P. dzui* differs by the stout cylindrical spadix unequally long-decurrent on a prominent stipe and by the strongly reflexed spathe (vs. *P. grandis* in which the spadix is ovoid to clavate and minutely cochleate at the insertion on a relatively short stipe and the spathe spreading to slightly reflexed). In the character of the cylindrical spadix *P. dzui* resembles *P. cylindricus* C. Presl (Philippines) from which it differs by the broad elliptic leaf lamina and short petiole.

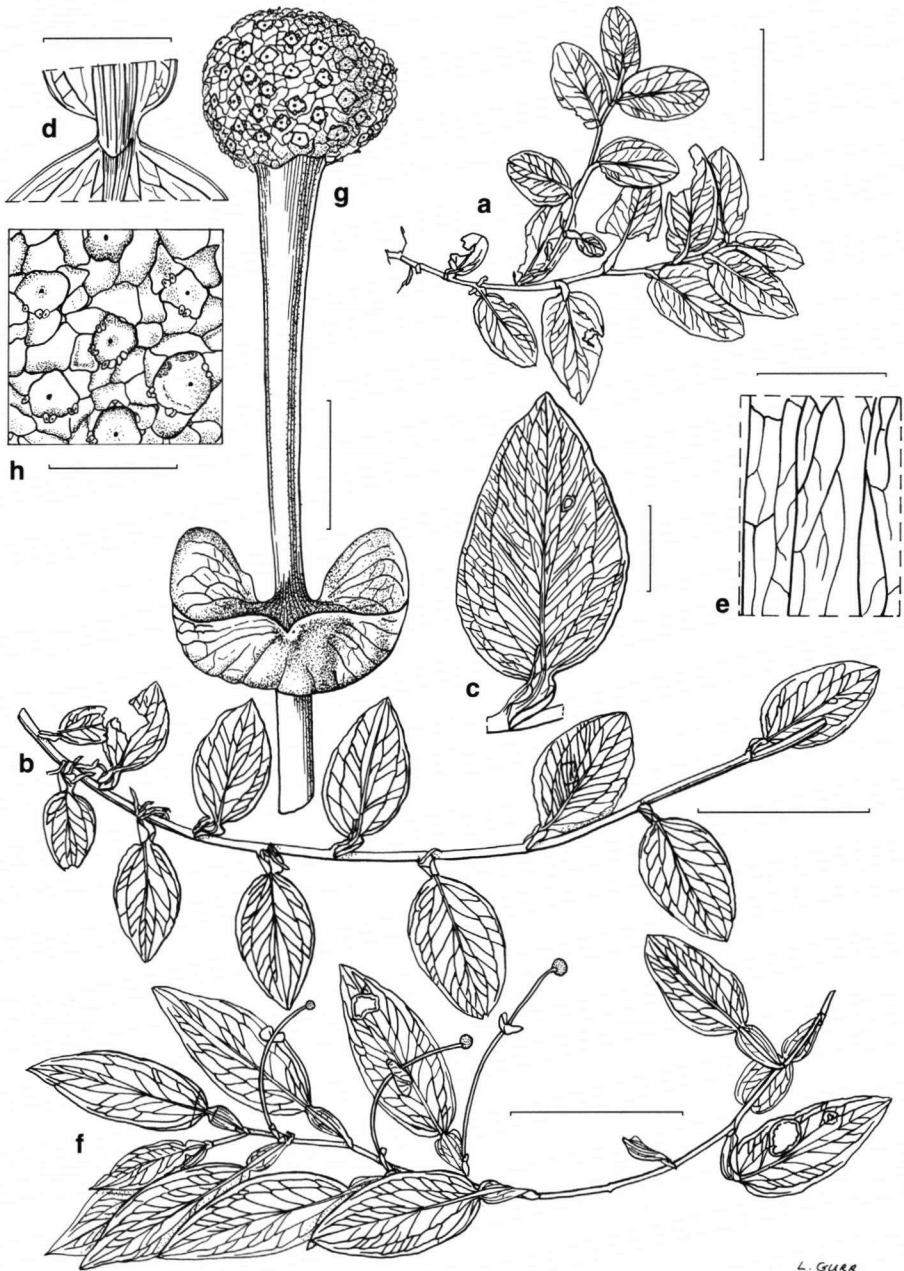
It gives me considerable pleasure to name this species for Nguyen Van Dzu, my Vietnamese collaborator, expert on geophytic Indochinese aroids and excellent field companion, who first drew my attention to the collection in HN.

### 3. *Pothos gigantipes* Buchet ex P.C. Boyce, *spec. nov.* — Fig. 3

*Pothos gigantipes* inter plures una species subgeneris typici Indochinensis inflorescentiis pedunculis longis, stipite longo atque spadice fertili globoso, ovoidea vel cylindrico est; ab omnibus speciebus ceteris subgeneris typici regionis combinatione inflorescentiis ceraceis albis et luteis, laminis adultis ellipticis atque surculis iuvenilibus caulibus compresse rectangularibus, angulis alatis, foliis insigniter venetis vel glaucis distinguitur. — Typus: Vietnam, Thua Thien Hue: Thua Luu F.D., 16 May 1918, *Chevalier 37045* (fl.) (holo P).

[*Pothos gigantipes* Buchet apud Gagnep. in Lecomte, Fl. Indo-Chine 6 (1942) 1080, t. 102, f. 3, 1085, nom. invalid. sine descr. Latin.; P.H. Hồ, Cây-co Miền Nam Việt-nam [Fl. South Vietnam – in Vietnamese] (1960) 690, pl. 267, D; Câyco Việt-nam [Ill. Fl. Vietnam – in Vietnamese and English] 3, 1 (1993) 421, pl. 8254.]





L. GUAR.

Fig. 3. *Pothos gigantipes* Buchet ex P.C. Boyce. a. Juvenile shoots; b. mature sterile shoot; c. whole leaf; d detail of junction of lamina and petiole; e. venation detail; f. fertile shoot; g. inflorescence; h. detail of spadix (a-h: Boyce 1195). — Scale bar to a = 60 mm; to b & f = 80 mm; to c = 20 mm; to d & g = 10 mm; to e & h = 5 mm.

Moderate to large, rather robust, homeophyllous, root-climbing liane to 4 m. Eocaul not observed; stem of juvenile shoot to 3 mm diam., strongly compressed-rectangular in cross section, the angles minutely to rather prominently winged, leaves  $\pm$  congested, blue- to grey-green; stem of mature sterile shoot to 6 mm diam., mid- to dark green, becoming brown with age, slightly to strongly compressed-rectangular in cross section, at first somewhat densely clothed with leaves, stems eventually becoming naked, naked portions with prominent nodes, stem of fertile shoot to 4 mm diam., straight to somewhat zigzagging, compressed-rectangular in cross section, somewhat prominently angled, the angles winged, mostly densely clothed with leaves, older portions naked at for approximately half their length, naked portions with prominent nodes to 60 mm distant; foraging shoot compressed-rectangular in cross section, to 3 mm diam., with a few oblong cataphylls and reduced foliage-leaves at first but soon becoming naked with slightly prominent nodes to 120 mm distant. *Leaves* when fresh grey- to dark green, paler abaxially, air drying dull greenish brown; petiole 2–70 by 2–20 mm, broadly winged, obovate-oblong to linear-oblong or elongate-triangular, with 2 or 3 secondary veins and numerous veinlets per side, all veins prominent, especially in dried material, base decurrent to clawed, apex truncate to prominently auriculate; lamina 25–140 by 15–50 mm, ovate to elliptic or lanceolate with (1 or) 2 or 3 intramarginal veins per side, these arising from the base and either immediately diverging, reaching the leaf tip or merging distally into a prominent submarginal collecting vein, additional veins arising obliquely from the midrib, remaining parallel with numerous veins arising from them, base broadly rounded to acute, apex ovate to attenuate-mucronate, acute or attenuate, minutely tubulate. *Flowering shoot* arising from the mid- to distal leaf axils of fertile shoots, bearing a minute prophyll and several 3–30 mm, sequentially longer, cataphylls. *Inflorescence* solitary; peduncle 30–100 by c. 2 mm, rather stout, erect, curving to bring the inflorescence upright in shoots pendent under their own weight, pale yellow; spathe 10–35 by 5–10 mm, ovate to reniform, concave, spreading to reflexed, base cordate, clasping and briefly decurrent on the peduncle, apex fornicate, obtuse with a prominent mucro, yellowish to greenish white; spadix stipitate; stipe 5–40 by 1–2 mm, terete in cross section, expanded distally, erect, straight, greenish yellow-white; fertile portion 10–13 by 10–15 mm, globose-clavate to ovoid, minutely clasping where inserted on the stipe, mid-yellow. *Flowers* 1–2 mm diam.; tepals 1 by 0.3 mm, oblong-cymbiform, mid-yellow, apices fornicate, truncate. *Stamens* 1–4 by c. 0.5 mm, filaments strap-shaped, thecae globose, c. 0.2 mm diam., pale yellow. *Ovary* 1–1.5 by 0.25–0.75 mm, compressed angular-ellipsoid, yellow-green; stylar region truncate, yellow; stigma punctiform. *Infructescence* with few to numerous berries; fruit obclavate to ovoid or ellipsoid, 10–17.5 by 10–20 mm, scarlet. *Seeds* c. 3–6 mm diam., ellipsoid to compressed-globose.

Distribution — Cambodia(?), Vietnam.

Habitat & Ecology — Damp evergreen forest on granite outcrops in otherwise anthropogenic grassland and agricultural land, variously degraded forest on sandstone and granite; altitude 95–650 m.

Notes — The most spectacular *Pothos* in Indochina, forming extensive colonies distinctive by the large grey-green leaves and long flowering shoots pendent under the weight of numerous large waxy yellow-and-white slightly fragrant inflorescences. The juvenile stage is equally striking with compressed, winged, rectangular stems

densely clothed with blue- to grey-green leaves closely appressed to boulders and tree trunks.

Together with *P. grandis* and *P. macrocephalus*, the smaller-inflorescenced *P. pilulifer* and *P. kerrii* and some Malesian species (e.g. Javan *P. junghuhnii*), *P. gigantipes* is typical of this species assemblage defined by inflorescences with mostly long peduncles, long stipes and globose to ovoid or cylindrical spadices.

*Pothos gigantipes* appears to be rare. *Boyce 1195* and *Nguyen Van Dzu 173*, collected contemporaneously from different individuals, were the first gatherings for over fifty years and together brought the number of known Vietnamese collections of *P. gigantipes* to five. A large flowering individual was observed but not collected in Khanh Hoa, Khan Son District, Vietnam in 1998 (Boyce & Dzu, pers. obs.)

The Cambodian record cited here is based on a sterile collection of three juvenile adherent shoots that, while closely resembling Vietnamese collections, is impossible to place with certainty.

*Geographically representative selection of collections studied:*

CAMBODIA: Locality not given: *Collard s.n.* (P).

VIETNAM: Khanh Hoa: Khanh Vinh, Khanh Nam, 17 March 1997, *Boyce 1195* (fl., fr.) (HN, K and K Spirit Coll. no. 63298, M). — Quang Nam—Da Nang: Ba Na, near Danang, N 015° 59', E 107° 59', 11 July 1923, *Poillane 7062* (fl.) (P). — Thua Thien Hue: Thua Luu F.D., N 016° 18', E 108° 00', 16 May 1918, *Chevalier 37045* (fl., fr.) (type of *Pothos gigantipes*, holo P).

#### 4. *Pothos grandis* Buchet ex P.C. Boyce & D.V. Nguyen — Fig. 4a, 4b

*Pothos grandis* Buchet apud Gagnep. ex P.C. Boyce & D.V. Nguyen, Kew Bull. 50 (1995) 754; [*Pothos grandis* Buchet apud Gagnep. in Lecomte, Fl. Indo-Chine 6 (1942) 1088, nom. invalid., sine descr. Latin. — P.H. Hô, Càyco Viêtnam [Ill. Fl. Vietnam — in Vietnamese and English] 3, 1 (1993) 421, pl. 8255.] — Type: Vietnam, Hoa Binh, Kim Boi, June 1926, *Colani 3002* (holo P; P, SAI).

Moderate-sized, rather robust, homeophyllous, root-climbing liane and hammock-forming secondary hemi-epiphyte to 3 m. Eocaul not observed; stem of juvenile shoot to 4 mm diam., sharply 4-angled, minutely winged along the angles, leaves rather scattered; stem of mature sterile shoot to 8 mm diam., deep green, becoming black-brown with age, drying dark green to almost black, weakly 4-angled or slightly compressed-terete in cross section, at first somewhat sparsely clothed with leaves, later naked, naked portions with prominent, slightly stepped nodes to 50 mm distant, stem of fertile shoot to 4 mm diam., mostly moderately clothed with leaves, occasionally older portions naked for approximately half their length, naked portions with prominent, stepped nodes to 30 mm distant; foraging shoot to 2 mm diam. with a few cataphylls and reduced foliage-leaves at first but soon becoming naked with slightly prominent nodes to 100 mm distant. *Leaves* when fresh deep green adaxially, paler and slightly yellowish abaxially, drying dull olive green; petiole 20–50 by 10–20 mm, broadly winged, obovate-oblong, with 2 or 3 secondary veins and numerous veinlets per side, all veins prominent, especially in dried material, base decurrent, apex truncate to rounded or slightly auriculate; lamina 140–230 by 55–100 mm, ovate with 2 intramarginal veins per side, these arising from the base and either reaching the leaf tip or merging into a prominent submarginal collecting vein, all additional veins arising obliquely from the midrib, remaining parallel with numerous veins arising from them, base rounded, apex acuminate-mucronate. *Flowering shoot* much abbreviated, arising

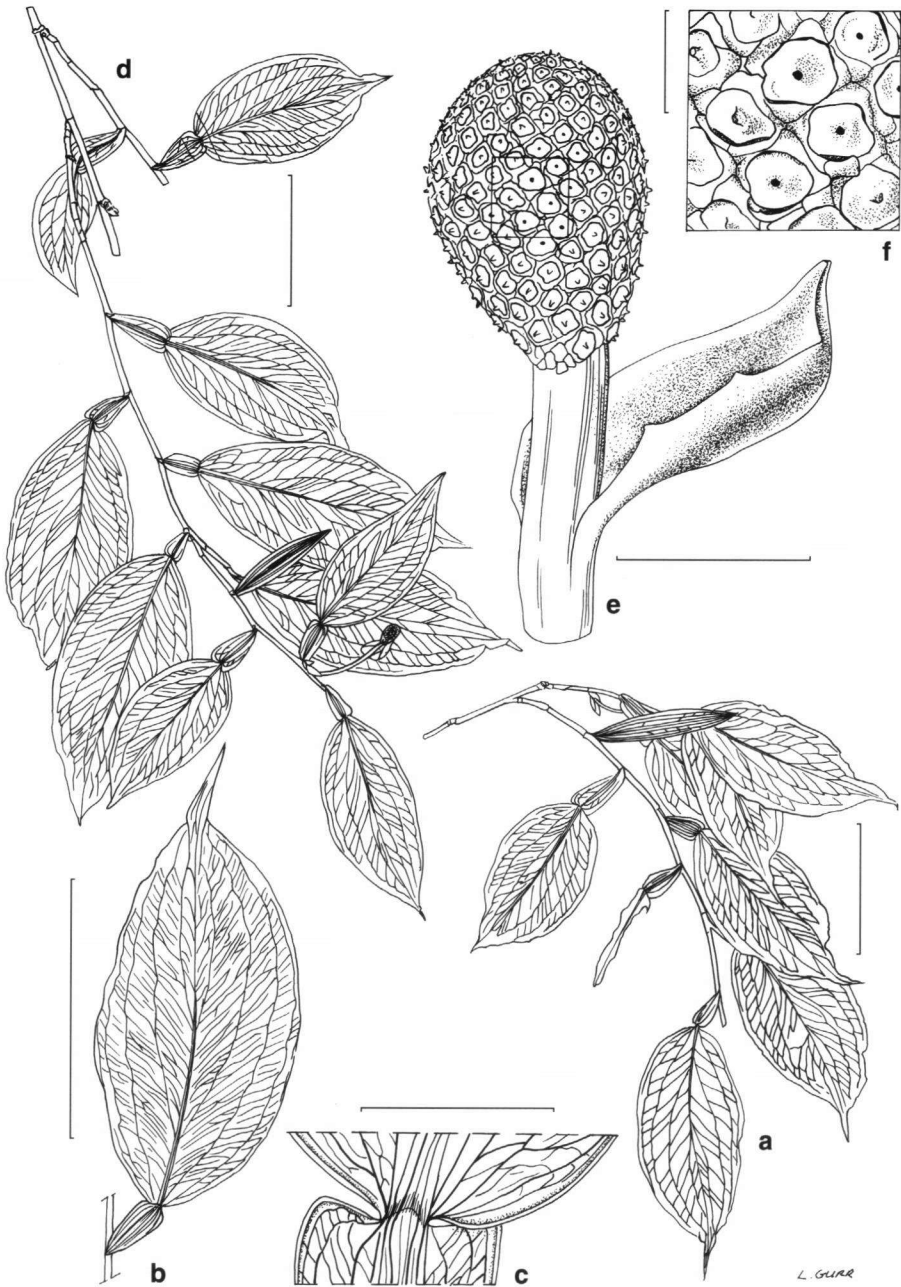


Fig. 4a. *Pothos grandis* Buchet ex P.C. Boyce & D.V. Nguyen. a. Fertile shoots; b. whole leaf; c. detail of junction of lamina and petiole; d. fertile shoots; e. inflorescence; f. detail of spadix (a–e: Boyce 857). — Scale bar to a, b & d = 80 mm; to c = 20 mm; to e = 10 mm; to f = 2 mm.



Fig. 4b. *Pothos grandis* Buchet ex P.C. Boyce & D.V. Nguyen. a. Fertile shoots; b. mature sterile shoots; c. older mature sterile shoots; d. older mature sterile shoot with reiteration; e. foraging shoot (a-e: Boyce 857). — Scale bar to a = 100 mm; to b-e = 80 mm.

from the middle and distal leaf axils of fertile shoots, bearing a minute prophyll and up to seven 4–30 mm, sequentially longer, cataphylls. *Inflorescence* solitary; peduncle 40–70 by 2–3 mm, robust, erect, tapering towards the apex, deep purple; spathe 25–52 by 20–30 mm, ovate to ovate-lanceolate, margins prominently inrolled, base slightly cordate to decurrent, apex acute with a somewhat stout mucro, deep purple, sometimes slightly greenish abaxially when fresh, drying almost black; spadix stipitate; stipe 12–15 by c. 2 mm, terete in cross section, deep purple; fertile portion 12–30 by 9–13 mm, ovoid to clavate, yellow-green to off-white. *Flowers* c. 2–3 mm diam.; tepals 6, 4 by 1.3 mm, oblong-cymbiform, yellow-green to dirty white, apices fornicate, triangular, truncate. *Stamens* 1–4 by c. 0.5 mm, filaments strap-shaped, thecae 1 by 0.25 mm cream. *Ovary* 5 by 1.75 mm, 3-locular, compressed angular-ellipsoid, yellow-green to dirty white; stylar region truncate; stigma prominent, punctiform, purple. *Infructescence* with 4–10 berries; fruit obclavate, 10–17.5 by 10–14 mm, green ripening through yellow to deep orange-red. *Seeds* c. 5–8 mm diam., ellipsoid to compressed-globose.

Distribution — Vietnam.

Habitat & Ecology — On trees and cliffs in fragments of very degraded lowland to lower hill evergreen forest on Karst limestone formations, evergreen forest on alluvium; altitude 75–750 m.

Vernacular name — Co'm lênh la'buo'i (Vietnamese).

Notes — The large sombre-coloured inflorescence, although less eye-catching than, e.g., *P. gigantipes*, makes for a striking plant. Similar overall to *P. dzui* but differing by the ovoid to clavate spadix and by the spreading to slightly reflexed spathe.

To date *P. grandis* has only been recorded from Vietnam. However, the collection from Pac Mo, Lang Son Province (*Soviet-Vietnam Expedition 1137*) was made close to the border with China and *P. grandis* is to be expected in southern China.

*Geographically representative selection of collections studied:*

VIETNAM: Hanoi: Dong Ham, near Kien Khe, 14 May 1883 (fl.), *Bon 2152a, b* (fl.) (P). – Ha Tay: My Duc, Chua Huong, 28 May 1977, *Nguyen Thi Nhan HN 111* (fl.) (HN). – Hoa Binh: Kim Boi, June 1926, *Colani 3002* (fl.) (type of *Pothos grandis*, holo P; P, SAI). – Kon Tum: Dak Glai, 29 March 1978, *Tran Ding Ly 389* (fl.) (HN). – Lang Son: Pac Mo, 23 March 1961, *Soviet-Vietnam Expedition 1137* (fl.) (LE). – Nghe An: From Phu Qui to Kebon, *Poilane 16565* (fl.) (P, SAI). – Ninh Binh: Cuc Phuong Nat. Park, 6 Jan. 1963, *Nguyen Quo Chung HN 2130* (fl.) (HN).

## 5. *Pothos kerrii* Buchet ex P.C. Boyce, *spec. nov.* — Fig. 5a, 5b

*Pothos kerrii* pedunculo stipiteque longo pergracili, spadice fertili globoso parvulo egregius est in genere; *P. pilulifero* nuper descripto leviter similis, sed pedunculo aliquantum longiore (in *P. pilulifero* fere absenti), stipiteque longiore pergraciliore distinguitur. — Typus: Lao P.D.R., Tau-yeng (Tawieng), 5 April 1932 (fl.), *Kerr 20900* (holo P; BK, K).

[*Pothos kerrii* Buchet apud Gagnep. in Lecomte, Fl. Indo-Chine 6 (1942) 1080, t. 102, f. 5, 1085, nom. invalid., sine descr. Latin.; P.H. Hô, Cây-co Miền Nam Việt-nam [Fl. South Vietnam – in Vietnamese] (1960) 690, pl. 267, G (*Pothos scandens* sic.); H. Li in C.Y. Wu & H. Li, Fl. Reip. Popul. Sin. 13, 2 (1979) 19, pl. 3, 8; J. Zhong, Ill. Limestone Mount. Pl. Guangxi (1982) 291; P.H. Hô, Câyco Việt-nam [Ill. Fl. Vietnam – in Vietnamese and English] 3, 1 (1993) 421, pl. 8256.]

[*Pothos guangxiensis* H. Li, nom. nud. in sched. KUN.]

Medium-sized, slender, homeophyllous, root-climbing liane to 4 m. Eocaul not observed; stem of juvenile shoot to 2 mm diam., weakly angled or terete in cross section, leaves congested; stem of mature sterile shoot to 6 mm diam., terete in cross section, at first somewhat densely clothed with leaves, stems eventually becoming naked, naked portions with prominent nodes to 50 mm distant, stem mid-green; fertile shoot often branching to three or more orders, stem to 3 mm diam., terete in cross section, mostly densely clothed with leaves, older portions naked at the base, naked portions with nodes to 30 mm distant; foraging shoot to 2 mm diam., proximally with a few oblong cataphylls and reduced foliage-leaves at first but soon becoming naked with slightly prominent nodes to 100 mm distant. *Leaves* when fresh mid-green, air drying dull green to brownish; petiole 10–30(–50) by 5–10 mm, broadly winged, oblong to oblong-triangular, with 2–4 secondary veins per side, veins prominent, especially in dried material, base decurrent to clawed, apex truncate to auriculate; lamina 75–130 by 12.5–25 mm, lanceolate to slender-elliptic, with 2 or 3 intramarginal veins per side, these arising from the base and immediately diverging and reaching the leaf tip, base rounded, apex long-attenuate-mucronate to acute, minutely tubulate. *Flowering shoot* much abbreviated, arising from the middle to distal leaf axils of fertile shoots, bearing a minute prophyll and a few 3–10 mm, sequentially longer, cataphylls. *Inflorescence* solitary; peduncle 25–40 by 0.5–1 mm, deep purple, very long and slender, erect to spreading, curving to bring inflorescence upright; spathe ovate, 4–6 by 3.5–7 mm, deeply concave to almost flat, margins straight, base prominently cordate, clasping and minutely decurrent on the peduncle, apex obtuse with a small but prominent mucro, greenish purple; spadix stipitate; stipe 10–18 by 0.23–0.75 mm, terete in cross section, erect, straight, deep purple; fertile portion 3.5–4 by 3.5–4.5 mm, globose, pale yellow. *Flowers* c. 1–2 mm diam.; tepals 1 by 0.3 mm, oblong-cymbiform, pale yellow, apices fornicate, triangular, truncate. *Stamens* 1–3 by c. 0.35 mm, filaments strap-shaped, thecae c. 0.2 mm diam., yellow. *Ovary* 1–1.5 by 0.25–0.75 mm, compressed angular-ellipsoid, yellow-green to dirty white; stylar region truncate; stigma punctiform. *Infructescence* with 1–7 berries; fruit 10–15 by 7.5–10 mm, obclavate to ellipsoid. *Seeds* c. 3–6 mm diam., ellipsoid to compressed-globose.

Distribution — Lao P.D.R., Vietnam, China (Guangxi).

Habitat & Ecology — Seasonal rather dry evergreen hill forest on precipitous granite slopes; altitude 400–550 m.

Notes — *Pothos kerrii* is distinctive by the short petioles and long, narrow leaf lamina with prominently raised veins and by the graceful inflorescences with a very long, almost filamentous peduncle, a long slender stipe and small spherical fertile spadix. Confusion can occur with *P. kerrii* in Vietnam and China where *P. pilulifer* is superficially similar. *Pothos pilulifer* differs in having broader leaves and an inflorescence with a very short, stout pedicel, a stout, straight stipe and a larger fertile spadix.

Rather few collections of *P. kerrii* exist, although this may be an artifact of collecting rather than a reflection of natural rarity considering the widespread provenance of the known collections. During fieldwork in 1997 at Bach Ma, Quang Nam–Da Nang Province, Vietnam, *P. kerrii* was a ubiquitous but seldom flowering element of the forest liane flora (Boyce & Dzu, pers. obs.).



Fig. 5a. *Pothos kerrii* Buchet ex P.C. Boyce. a. Fertile shoot; b. whole leaf; c. detail of junction of lamina and petiole; d. venation detail; e. inflorescence; f. detail of spadix (a–c, e & f: *Poilane 31452*; d: *Boyce 1184*). — Scale bar to a = 40 mm; to b = 30 mm; to c & e = 5 mm; to d = 10 mm; to f = 1 mm.



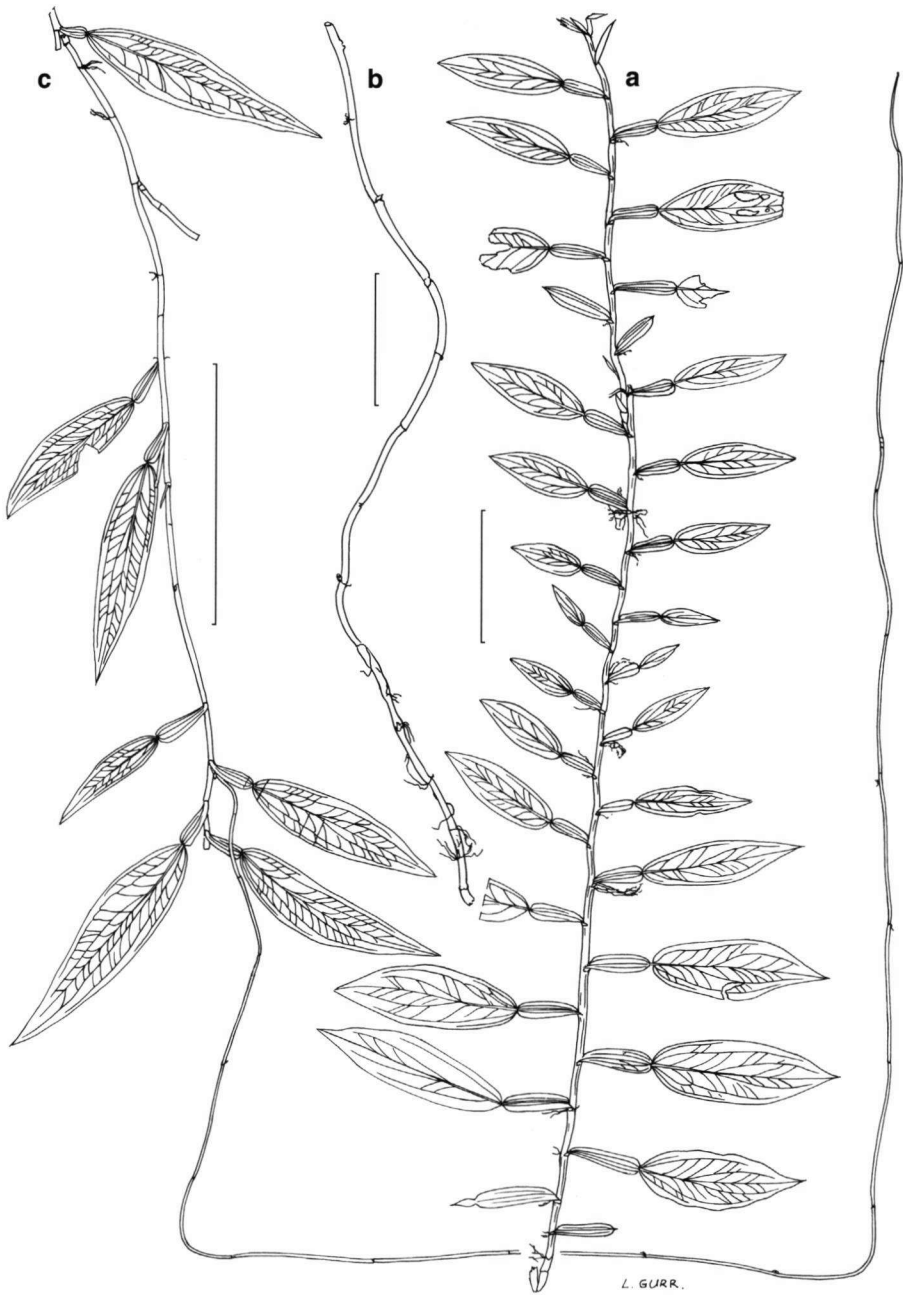


Fig. 5b. *Pothos kerrii* Buchet apud Gagnep. ex P.C. Boyce. a. Juvenile shoot; b. older, leafless portion of sterile mature shoot; c. foraging shoot (a-c: *Boyce 1184*). — Scale bar to a = 40 mm; to b = 60 mm; to c = 120 mm.

*Geographically representative selection of collections studied:*

CHINA: Guangxi: Ninming County, 11 Oct. 1979, *Longgan Exped. 11605* (fl.) (KUN).

LAO P.D.R.: Louangphrabang: Louangphrabang, N 019° 52', E 102° 08', April 1913, *d'Alleizette s.n.* (fl.) (L). — Xieng Khouang: Tau-yeng (Tawiang), 5 April 1932, *Kerr 20900* (fl.) (type of *Pothos kerrii*, holo P; BK, K).

VIETNAM: Hoa Binh: Muong Khen, N 020° 40', E 105° 20', April 1933, *Pételot 4691* (fl.) (P, US). — Lang Son: Hui Lui, 2 Oct. 1996, *Nguyen Van Dzu 104* (fl.) (HN). — Quang Nam-Da Nang: Go Oi, 22 Feb. 1941, *Poilane 31452* (fl.) (AAU, K, L, P). — Yen Bai: Dong Tam, N 021° 30', E 105° 00', 5 May 1961, *Soviet-Vietnam Expedition 1806* (fl., fr.) (LE).

**6. *Pothos macrocephalus* Scort. ex Hook. f. — Fig. 6a, 6b**

*Pothos macrocephalus* Scort. ex Hook. f., Fl. Brit. India 6 (1893) 553; Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 31. — Lectotype selected here: Malaysia, Perak, Larut, *Scortechini 116b* (CAL, K). In publishing *P. macrocephalus* Hooker cites several syntypes [*Kunstler* ('*Dr King's collector*') 492 (K), 4327 (K), 6029 (K), and *Scortechini 116b* (CAL, K)] all from Bk. Larut, Perak. The Scortechini collection chosen here as a lectotype is the best collection and also pertinent in that it bears the manuscript name '*P. macrocephalus*' in Scortechini's handwriting.

Large, robust, homeophyllous, root-climbing liane to 15 m. Eocaul not observed; stem of juvenile shoot to 8 mm diam., weakly angled or subterete in cross section, leaves scattered or congested; stem of mature sterile shoot to 12 mm diam., mid-green, later turning brown, air-drying black-brown weakly 4-angled, at first somewhat densely clothed with leaves, early growth often with all leaves directed forwards and the whole appearing imbricated, later with leaves distichous, spreading, stems eventually becoming naked, naked portions with prominent 60–80 mm distant nodes; stem of fertile shoot to 5 mm diam., terete to weakly to somewhat prominently angled in cross section, the angles occasionally minutely winged, mostly densely clothed with leaves, older portions naked for approximately half their length, naked portions with prominent nodes to 30 mm distant. *Leaves* when fresh bright to mid-green adaxially, paler abaxially, air drying dull green to brownish; petiole 50–140 by 5–15 mm, broadly winged, oblong to obovate-oblong, with 4 or 5 secondary veins per side, base decurrent to clawed, apex truncate, rounded or auriculate; lamina 3–180 by 15–c. 205 mm, ovate to elliptic or lanceolate with 2–4 intramarginal veins per side, these arising from the base and either immediately diverging or remaining very close and parallel to midrib and then diverging further along lamina, either reaching the leaf tip or merging into a prominent submarginal collecting vein, additional veins arising obliquely from the midrib, remaining parallel with numerous veins arising from them, base rounded to acute, apex attenuate-mucronate to acute or attenuate, minutely tubulate. *Flowering shoot* much abbreviated, arising from mostly the middle to distal leaf axils of fertile shoots, sometimes arising on older (foliage) leafless parts, bearing a minute prophyll and a few 5–35 mm, sequentially longer, cataphylls. *Inflorescence* solitary; peduncle 40–100 by 1.5–2 mm, rather stout, erect, dull orange-yellow; spathe 4–12 by 4–10 mm, ovate, flat to convex, base cordate, clasping the peduncle, apex slightly raised, acute to subacute with a stout mucro, white, somewhat waxy; spadix stipitate; stipe 27.5–40 by 2–2.5 mm, terete in cross section, erect, straight, pale green; fertile portion 12.5–15 by 10–12 mm, ovoid-clavate, mid-yellow. *Flowers* c. 1–2 mm diam.; tepals 1 by 0.3 mm, oblong-cymbiform, apices fornicate, triangular, truncate. *Stamens* 1–4 by c. 0.5 mm, filaments strap-shaped, thecae c. 0.2 mm diam., yellow. *Ovary* 1–1.5 by

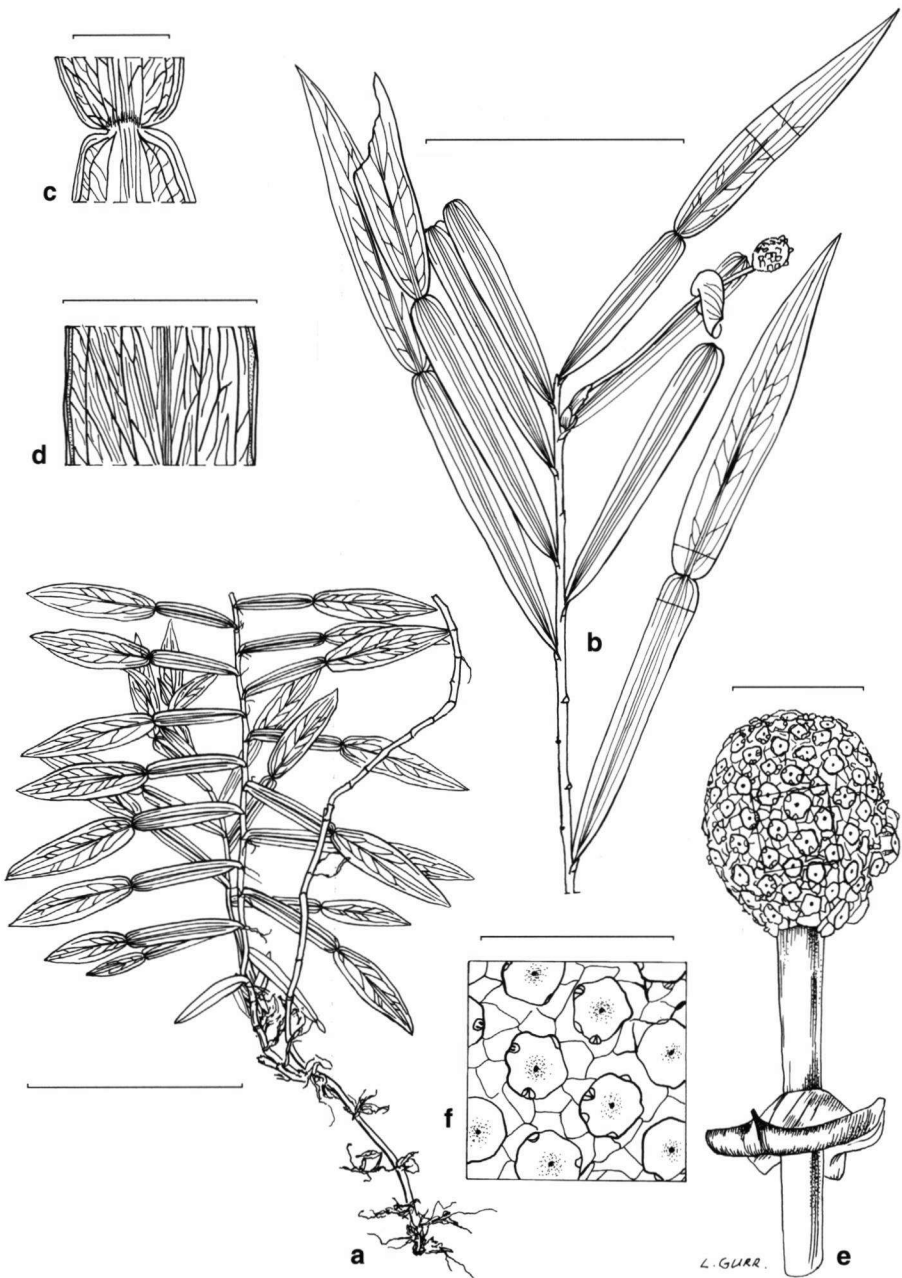


Fig. 6a. *Pothos macrocephalus* Scort. ex Hook.f. a. Juvenile shoots; b. fertile shoot; c. detail of junction of lamina and petiole; d. venation detail; e. inflorescence; f. detail of spadix (a-f: Boyce 1217). — Scale bar to a = 100 mm; to b = 60 mm; to c = 5 mm; to d-f = 10 mm.

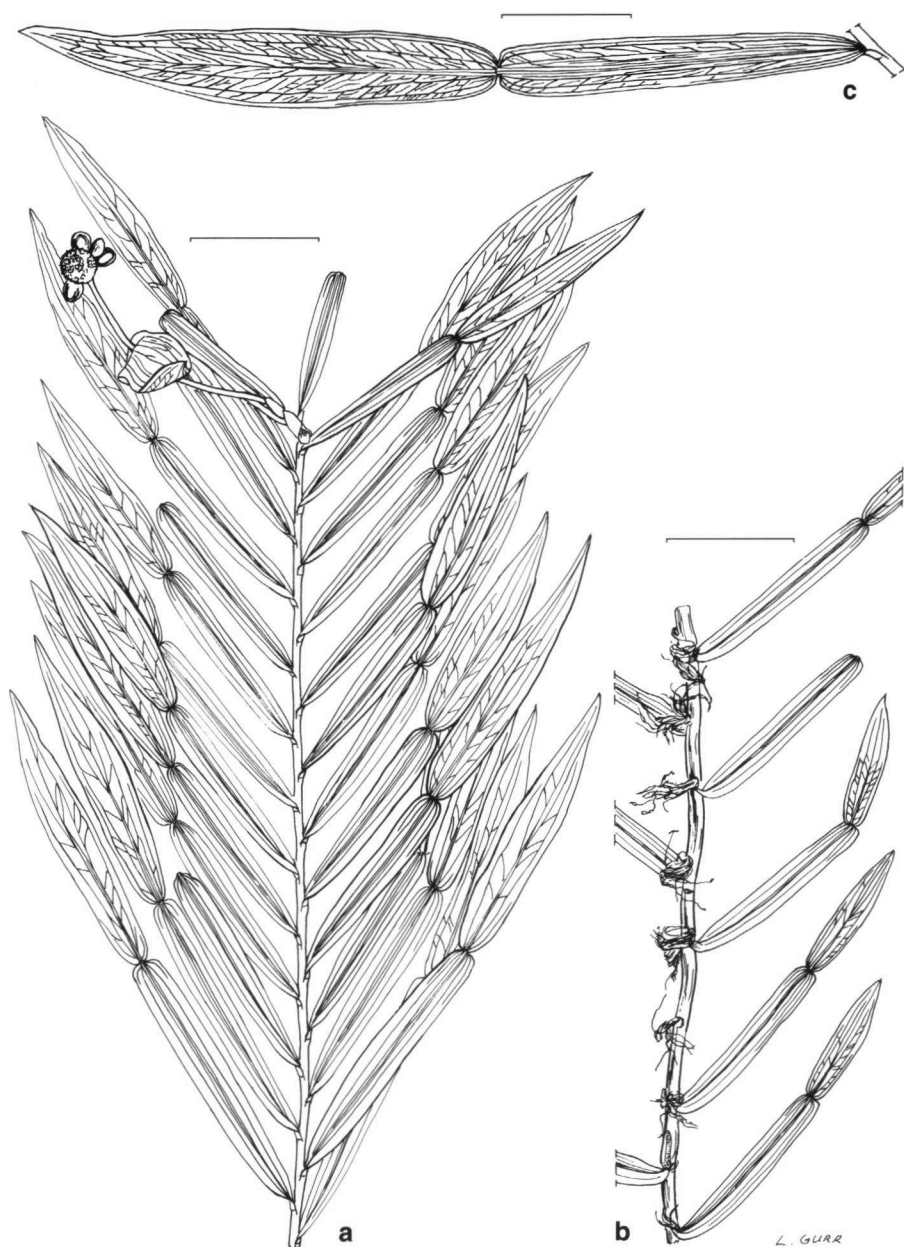


Fig. 6b. *Pothos macrocephalus* Scort. ex Hook. f. a. Fertile shoot; b. sterile mature shoot; c. whole leaf (a–c: *Boyce 1217*). — Scale bar to a = 40 mm; to b = 80 mm; to c = 30 mm.

0.25–0.75 mm, compressed angular-ellipsoid, yellow; stylar region truncate; stigma punctiform. *Infructescence* with 1–5 berries; fruit obclavate to ovoid or ellipsoid, 10–17.5 by 10–14 mm, deep green ripening to scarlet, epidermis of upper part of ovary roughened in submature fruits, more or less smooth when ripe. *Seeds* c. 3–6 mm diam., ellipsoid to compressed-globose.

*Distribution* — Thailand, Peninsular Malaysia, Indonesia (Sumatera).

*Habitat & Ecology* — Rain forest on granitic rock along streams, moist evergreen forest on moderate slopes; altitude 50–300 m.

*Note* — A large distinctive climber which, for the area under review, has so far been collected only in Yala and Narathiwat Provinces of Peninsular Thailand where its occurrence is sporadic. The large yellow-and-white inflorescences are most similar in appearance to those of *P. gigantipes*. However, the form of the mature and juvenile leaves of these species is quite different (compare Fig. 6a, 6b with 3). Sterile *P. macrocephalus* can be confused with *P. scandens* although in the latter the petiole is generally shorter than the lamina and overall *P. macrocephalus* is a more massive plant.

*Geographically representative selection of collections studied:*

THAILAND: PEN75. Yala: Than Tio, N 006° 20', E 101° 20', 25 April 1974, *Geesink & Hattink* 6437 (fl., fr.) (BKF, K, L). — PEN76. Narathiwat: Sungei Kolok, Nikom Waeng, N 005° 50', E 101° 50', 1 March 1974, *Larsen & Larsen* 32765 (fl.) (AAU, BKF, K, L, P).

## 7. *Pothos pilulifer* Buchet ex P.C. Boyce, *spec. nov.* — Fig. 7

*Pothos pilulifer* cum *P. kerrii* confundatur, sed inflorescentia paene sessili, stipite longo recto crasso atque spadice fertili globoso parvo facile agnoscitur. — *Typus*: Vietnam, Lang Son, Dong Dang, N 021° 57', E 106° 42', Feb. 1886, *Balansa* 261 (fl.) (holo P; K).

[*Pothos pilulifer* Buchet apud Gagnep. in Lecomte, Fl. Indo-Chine 6 (1942) 1080, t. 102, f. 4, 1084, nom. invalid. sine descr. Latin.; P.H. Hô, Cây-co Miền Nam Việt-nam [Fl. South Vietnam – in Vietnamese] (1960) 690, pl. 267, E; C.Y. Wu & H. Li in C.Y. Wu & H. Li, Fl. Yunnan. 2 (1979) 742; H. Li in C.Y. Wu & H. Li, Fl. Reip. Popul. Sin. 13, 2 (1979) 18; J. Zhong, Ill. Limestone Mount. Pl. Guangxi (1982) 292; P.H. Hô, Câyco Việt-nam [Ill. Fl. Vietnam – in Vietnamese and English] 3, 1 (1993) 422, pl. 8257.]

Moderate to large, robust, homeophyllous, root-climbing liane to 5 m. Eocaul not observed; stem of juvenile shoot to 4 mm diam., rectangular in cross section, angles slightly winged, leaves congested; stem of mature sterile shoot to 12 mm diam., rectangular in cross section, more or less compressed, the angles minutely but prominently winged, stems at first somewhat densely clothed with leaves, eventually becoming naked, naked portions with prominent 70 mm distant nodes; fertile shoot often not branching, stem to 3 mm diam., somewhat prominently angled in cross section, the angles minutely winged, leaves somewhat distant, older portions retaining their leaves in specimens observed. *Leaves* when fresh mid-green adaxially, paler abaxially, air drying brownish green; petiole 10–40 by 4–17 mm, somewhat narrowly to rather broadly winged, obovate-oblong to linear-oblong or elongate-triangular, with 2–4 secondary veins and numerous veinlets per side, all veins, but particularly secondary veins, prominent, especially in dried material; lamina 35–110 by 20–50 mm, ovate to elliptic or lanceolate with 2–4 intramarginal veins per side, these arising from the base and either immediately diverging or remaining very close and parallel to midrib

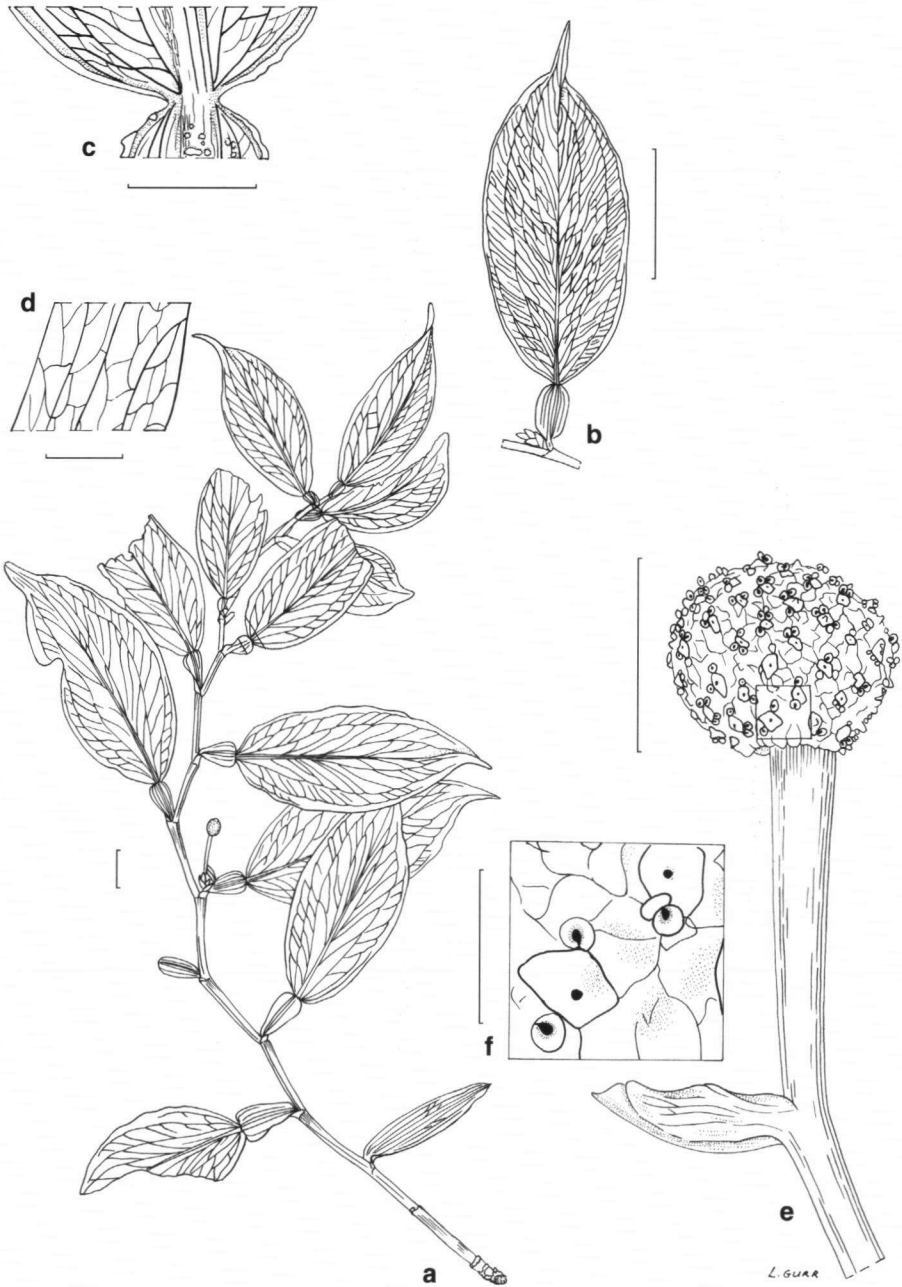


Fig. 7. *Pothos pilulifer* Buchet ex P.C. Boyce. a. Fertile shoot; b. whole leaf; c. detail of junction of lamina and petiole; d. venation detail; e. inflorescence; f. detail of spadix (a–f: *Balansa 261*). — Scale bar to a = 40 mm; to b = 30 mm; to c & e = 5 mm; to d = 2 mm; to f = 1 mm.

and then diverging further along lamina, either reaching the leaf tip or merging into a prominent submarginal collecting vein, additional veins arising obliquely from the midrib, remaining parallel with numerous veins arising from them, base decurrent, apex truncate, rounded or auriculate, base rounded to subacute, apex attenuate, somewhat prominently tubulate. *Flowering shoot* much abbreviated, arising mostly from the upper-middle to distal leaf axils of fertile shoots, bearing a minute prophyll and a few 3–8 mm, sequentially longer, cataphylls. *Inflorescence* solitary; peduncle 0–3 (–5) by c. 1 mm, stout, erect, green; spathe 4–5 by 2.5–4 mm, ovate, concave, margins strongly inrolled, base decurrent on the peduncle, apex fornicate to recurved, acute, green to greenish purple; spadix stipitate; stipe 10–12 by 1–1.25 mm, terete, erect, straight to slightly curved, stout, green to greenish purple; fertile portion 4–5 by 4–5 mm, globose, yellow. *Flowers* c. 1–2 mm diam.; tepals 0.5 by 0.3 mm, oblong-cymbiform, apices fornicate, triangular, truncate. *Stamens* 1–1.1 by c. 0.5 mm, filaments strap-shaped, thecae c. 0.2 mm diam., yellow. *Ovary* 1–1.5 by 0.25–0.75 mm, compressed angular-ellipsoid, yellow-green to dirty white; stylar region truncate; stigma punctiform. *Infructescence* not observed.

Distribution — China (Guangxi), Vietnam.

Habitat & Ecology — Seasonal to moist evergreen forest on limestone rocks; altitude 300 m.

Notes — *Pothos pilulifer* is superficially similar to *P. kerrii*, differing by broader leaves and an inflorescence with a very short, stout pedicel, a stout, straight stipe and a slightly larger fertile spadix.

There are only seven recorded collections of *P. pilulifer*, all but two originating from northern Vietnam. Unlike the situation with *P. kerrii* (q.v.) the paucity of collections seems to reflect natural rarity; *P. pilulifer* is seldom encountered in nature.

*Geographically representative selection of collections studied:*

CHINA: Guangxi: Longjing, 18 Dec. 1958, *Zhang Zhaoqian 12744* (fl.) (MO).

VIETNAM: Ha Tay: Huong Son, Phu Ma, 26 May 1977, *Ha Thin Dung 197* (fl.) (HN). – Lang Son: Dong Dang, N 021° 57', E 106° 42', Feb. 1886, *Balansa 261* (fl.) (type of *Pothos pilulifer*, holo P; K). – Lao Cai: Phong Tho, N 022° 32', E 103° 21', 6 Dec. 1937, *Poilane 26730* (fl.) (P). – Ninh Binh: Cuc Phuong, 25 Oct. 1995, *Nguyen Van Dzu 79* (fl.) (HN).

## 8. *Pothos repens* (Lour.) Druce — Fig. 8

*Pothos repens* (Lour.) Druce, Rept. Bot. Exch. Club Brit. Isles 4 (1917) ('1916') 641; Gagnep. in Lecomte, Fl. Indo-Chine 6 (1942) 1088; P.H. Hô, Cây-co Miền Nam Việt-nam [Fl. South Vietnam – in Vietnamese] (1960) 690, pl. 267, B; Fl. Hainan. 4 (1977) 130, pl. 1034; C.Y. Wu & H. Li in C.Y. Wu & H. Li, Fl. Yunnan. 2 (1979) 744, pl. 202, 9; H. Li in C.Y. Wu & H. Li, Fl. Reip. Popul. Sin. 13, 2 (1979) 20, pl. 3, 9; M.L. Sai in Y.K. Li et al., Fl. Guizhou. 6 (1987) 548, pl. 161, 2; P.H. Hô, Câyco Việt-nam [Ill. Fl. Vietnam – in Vietnamese and English] 3, 1 (1993) 420, pl. 8258. — *Flagellaria repens* Lour., Fl. Cochinch. 1 (1790) 212. — *Pothos loureiroi* Hook. & Arn. in Beechey, Voy. (1841) 220, nom. illeg., *Flagellaria repens* pro. syn. incl. type ('*loureiri*'). — [*Pothos repens* (Lour.) Merr., Philipp. J. Sci. 15 (1919) 228, comb. superfl.]. — Epitype designated here: Vietnam, Quang Nam–Da Nang, Ba Na hill station, base of mountain at start of trail to summit, c. 24 km SW of Danang, N 16° 01', E 108° 01', 13 March 1997, *Boyce 1188* (fl.) (HN, K and K Spirit Coll. no. 63299, M). Despite exhaustive enquiries and searches in BM, G, and P, I have failed to trace a type specimen for the name *Flagellaria repens* Lour. In proposing the name *Flagellaria repens* Loureiro cites the plate of *Adpendix duplo folia* [Rumphius, Herb. Amb. 5 (1747) pl. 184, f. 1]. Geographical considerations aside (*P. repens* is

restricted to southern China and northern Indochina) Rumphius's illustration is too crude to be identifiable to species. Loureiro's description and geographical data agree unmistakably with the common *Pothos* in northern Indochina here taken to be *P. repens*.

*Pothos terminalis* Hance, Ann. Sc. Nat. Bot. 5, sér. 5 (1866) 247. — Type: China, Guangdong,

Ting Wu Shan, West River, *Sampson 11168*, June 1864 (holo BM; GH, K).

[*Pothos hainanensis* S.Y. Hu, nom. nud. in sched. C, GH, K et MO.]

Moderate to very large, slender to robust, homeophyllous, root-climbing liane to 15 m. Eocaul foraging and weakly climbing, apparently of indeterminate length but often (perhaps always) terminating through meristematic damage and reiterating from one or more lateral buds, leaves congested, subshingling but not different in shape to those of adult shoots; stem of juvenile shoot to 4 mm diam., weakly angled or terete in cross section, leaves initially subshingling, later merely congested; stem of mature sterile shoot to 20 mm diam., mid-green, becoming greyish with age, drying yellowish brown, weakly 4-angled or slightly compressed-terete in cross section, often somewhat sinuous, densely clothed with leaves, later becoming naked, naked portions with prominent nodes to 60 mm distant; reiteration shoot exceptionally robust, to 20 mm diam., rooting prolifically, leaves densely imbricated and directed upwards, later spreading. *Leaves* when fresh bright to deep-green adaxially, paler abaxially, air drying yellowish to brown; petiole 50–200 by 5–25 mm, broadly winged, oblong-obovate-lanceolate to linear-oblong, with 2 or 3 barely differentiated primary veins running parallel to midrib and numerous parallel to subparallel and reticulate veinlets per side, primary and larger secondary veins reaching the petiole tip and there curving inwards to merge with the leaf lamina/petiole junction, veins not especially prominent, base decurrent, apex truncate, slightly auriculate; lamina 20–80 by 10–20 mm (lowermost leaves on a shoot sometimes only with a vestigial lamina), ovate to elliptic or triangular-lanceolate, with 3(–5) more or less parallel primary veins arising from the base reaching the lamina tip, base rounded to truncate, apex subacute to acute, briefly tubular-mucronate; fertile shoot branching to three or more orders, often pendent to great length, stem to 5 mm diam., densely clothed with leaves, older portions naked for approximately half their length, naked portions with prominent, stepped nodes to 30 mm distant. *Flowering shoots* somewhat abbreviated to well-developed by enrichment, arising from few to several of the distal leaf axils of fertile shoots, occasionally arising from naked older portions of shoot, bearing a minute prophyll and a few to many 5–40 mm, sequentially longer, cataphylls, the longest sometimes furnished with a prominent vestigial leaf lamina. *Inflorescences* solitary to several together, either congested or spaced along a leafy to naked branching system to 20 mm long; peduncle 3–8 by 0.5–2 mm, slender, curving to spreading, terminal portion erect, green; spathe 20–70 by 3–6 mm, elongate-elliptic, strongly reflexed and occasionally bent at anthesis, margins recurved to reflexed, base briefly decurrent, apex apiculate to shortly filiform, greenish, margins stained purple; spadix stipitate; stipe 10–130 by 1–1.2 mm, terete in cross section, erect, greenish to purple; fertile portion 40–80 by 2–4 mm, slender cylindrical, sometimes strongly obliquely inserted on stipe, yellow-green to off-white. *Flowers* c. 1–2 mm diam.; tepals 1 by 0.3 mm, oblong-cymbiform, apices fornicate, triangular, truncate. *Stamens* 1–4 by c. 0.5 mm, filaments strap-shaped, thecae c. 0.2 mm diam. *Ovary* 1.6 by 0.25 mm, compressed angular-ellipsoid, greenish to whitish; stylar region truncate; stigma prominent, punctiform. *Infructescence* with few berries;





Fig. 8. *Pothos repens* (Lour.) Druce. a. Older portion of sterile mature shoot; b. reiteration shoot; c. fertile shoot; d. whole leaf; e. detail of junction of lamina and petiole; f. venation detail; g. inflorescence; h. detail of spadix (a & b: *Boyce 863*; c-h: *Boyce 1188*). — Scale bar to a & d = 40 mm; to b & g = 30 mm; to c = 60 mm; to e = 10 mm; to f = 5 mm; to h = 2 mm.

fruit 7–15 by 10–14 mm, turbiniform to ellipsoidal, globose at maturity. *Seeds* c. 3–6 mm diam., ellipsoid to compressed-globose.

Distribution — China (Guangdong, Guangxi, Hainan, Hong Kong), Lao P.D.R., Vietnam.

Habitat & Ecology — Primary to heavily disturbed evergreen hill forest, dry secondary forest with bamboo, woodland, thickets and scrub, open, damp *Pinus kaempferi* plantation, occasionally on bare rocks or limestone formations, usually on sandy soil or limestone on moderate to steep slopes; altitude 85–1000 m.

Notes — A large, occasionally exceptionally so, distinctive climber with long pendent fertile shoots carrying distichous leaves composed of an expanded and greatly elongated petiole and an often semi-vestigial lamina. The inflorescences are comparatively large and slender, arising from the uppermost leaves of a shoot, and having the appearance of fascicles of inflorescences. Although very distinctive when flowering, sterile specimens of *P. repens* can be confused with *P. scandens* and *vice versa*. Confusion can also occur between *P. repens* and the vegetatively similar *Pothoidium lobbianum* Schott, a predominantly Malesian monotypic genus (see Mayo et al., 1997) recorded from southern Taiwan but not recorded for mainland Asia.

*Geographically representative selection of collections studied:*

CHINA: Guangdong: Ting Wu Shan, West River, June 1867, *Sampson 11168* (fl.) (BM, GH, K). — Guangxi: Lungchow, 'Lung Yiock', Dec., *Morse 203* (fl.) (K). — Hainan: Ngai, between T'ang K'iu (Din-Kio) and Po T'eng Shi (Bo Deng), 23 April–23 May 1932, *McClure 20053* (fl.) (BM, E, GH, K, MO, P). — Hong Kong: Aberdeen, *Lamont s.n.* (fl.) (L).

LAO P.D.R.: Savannakhet: Ban Phonthan, N 015° 41', E 106° 28', *Spire 212* (fl.) (P).

VIETNAM: Gia Lai: K'bang District, Buon Luoi, c. 40 km NW of An Khe, 14 March 1997, *Boyce 1193* (fl.) (HN, K, M). — Ha Tay: Ba Tai Valley, foot of Ba Vi, N 022° 27', E 105° 01', 12 April 1888, *Balansa 2063* (fl.) (K, P). — Hai Phong: Chau Mong, N 020° 44', E 106° 33', 17–18 April 1914, *Fleury 32163* (fl.) (K, P). — Hoa Binh: Tan Lac, Man Duc, N 020° 36', E 105° 18', 30 Aug. 1994, *Boyce 863* (fl.) (HN, K). — Lang Son: Noi Tiem, N 022° 28', E 106° 11', 26 April 1961, *Soviet-Vietnam Expedition 1382* (fl.) (LE). — Ninh Binh: Cuc Phuong N.P., *Doan Khao Sat Viet Trung 4904* (fl.) (HN). — Quang Nam–Da Nang: Ba Na hill station, base of mountain at start of trail to summit, c. 24 km SW of Danang, N 016° 01', E 108° 01', 13 March 1997, *Boyce 1188* (fl.) (neotype of *Pothos repens*, HN, K and K Spirit Coll. no. 63299, M); Da Nang, 3 June 1920 (fr.), *Poilane 1465*. — Quang Ninh: Sai Vong Mo Leng, Lung Wan, N 021° 26', E 107° 32', 18 May–5 July 1940, *W.T. Tsang 29998* (fl.) (BKF, C, GH, K, P). — Quang Tri: Quang Tri, N 016° 45', E 107° 15', 4 June 1924, *Poilane 10770* (fl., fr.) (P). — Than Hoa: Near Quang Yen, N 019° 33', E 105° 31', Aug. 1885, *Balansa 615* (fl.) (K, P). — Thua Thien Hue: Phu Loc, 43 km SE of Hue on Highway 1, 11 March 1997, *Boyce 1183* (fl.) (HN, K and K Spirit Coll. no. 63297, M). — Tuyen Quang: Long Tcheoung, *Simond s.n.* (fl.) (P, SAI). — Vinh Phu: Tam Dao, c. 100 km NW of Hanoi, N 021° 27', E 105° 38', 6 March 1997, *Boyce 1159* (fl.) (HN, K, M). — Yen Bai: 'Dep Tam', 5 May 1961, *Soviet-Vietnam Expedition 1851* (fl.) (LE).

## 9. *Pothos scandens* L. — Fig. 9a, 9b

*Pothos scandens* L., Sp. Pl. (1753) 698; ed. 2 (1763) 1373–1374, 1675; Lour., Fl. Cochinch. (1790) 532; Schott in Schott & Endl., Melet. Bot. (1832) 21; Endl., Gen. Pl. 3 (1837) 239; Kunth, Enum. Pl. 3 (1841) 65; Schott, Aroid. (1856–1857) 22, t. 33; Gen. Aroid. (1858) t. 95; Prodr. Syst. Aroid. (1860) 563; Engl. in A. & C. DC., Monogr. Phanerogam. 2 (1879) 84; in Engl., Pflanzenz. 21 (IV.23B) (1905) 26; Gagnep. in Lecomte, Fl. Indo-Chine 6 (1942) 1084; S. Y. Hu, Dansk Bot. Arkiv 23, 4 (1968) 413; C. Y. Wu & H. Li in C. Y. Wu & H. Li, Fl. Yunnan. 2 (1979) 741, pl. 202, 1–7; H. Li in C. Y. Wu & H. Li, Fl. Reip. Popul. Sin. 13, 2 (1979) 16,

- pl. 3, 1–7; P.H. Hô, *Câyco Vietnam* [Ill. Fl. Vietnam – in Vietnamese and English] 3,1 (1993) 422, pl. 8259. — Type: *Herb. Hermann* 4: 39, No. 329 [lecto BM; designated by Suresh et al., *Taxon* 32 (1983) 127].
- Pothos longifolius* C. Presl, *Epimel. Bot.* (1849) 242, nom. illeg., non *Pothos longifolius* Hoffmanns., *Verz. Pfl.* 102: Nachtr. 3 (1826) 53 (Mexico) nec *Pothos longifolius* Link & Otto ex Steud., nom. ed. 2, 2 (1841) 391 (Venezuela). — Based on: Philippines, Luzon, Tayabas, *Cuming* 682 (G, K).
- Pothos angustifolius* C. Presl, *Epimel. Bot.* (1849) 243, syn. nov. — Type: Myanmar, between Moulmine and Martaban, *Helper sub Herb. East India Co. no. 5944* (holo not traced; iso C, K, L, P).
- Pothos microphyllus* C. Presl, *Epimel. Bot.* (1849) 243, nom. illeg., non *Pothos microphyllus* Hook., *Curt. Bot. Mag.* (1829) t. 2953 (Brazil). — Based on: Myanmar, between Moulmine & Martaban, *Helper sub Herb. East India Co. no. 5942* (K, P).
- Pothos scandens* L. var. *javanica* de Vriese, *Pl. Jungh.* 1 (1851) 103, syn. nov. — Type: Indonesia, Java, *Zollinger* 422 (holo L).
- Pothos scandens* L. var. *zeylanica* de Vriese, *Pl. Jungh.* 1 (1851) 103, syn. nov. — Type: *Splitgerber* 27 (holo L).
- Pothos scandens* L. var. *sumatrana* de Vriese, *Pl. Jungh.* 1 (1851) 103, syn. nov. — Type: Indonesia, Sumatera, *Junghuhn s.n.* (holo L).
- Pothos leptospadix* de Vriese in Miq., *Pl. Jungh.* 1 (1851) 105, syn. nov. — Type: Indonesia, Sumatera, Angkola, near Tobing, *Junghuhn s.n.* (holo L).
- Pothos zollingerianus* Schott, *Oesterr. Bot. Wochenbl.* 5 (1855) 19, syn. nov. — *Pothos scandens* L. var. *zollingerianus* (Schott) Engl. in Engl., *Pflanzenr.* 21 (IV.23B) (1905) 26. — Type: Indonesia, Java, near Bandung, Gn. Ardjuno, 19 Sept. 1844, *Zollinger* 2275 (holo L; P).
- Pothos horsfieldii* Miq., *Fl. Ned. Ind.* 3 (1856) 178. — *Pothos angustifolius* Reinw. ex Miq., *Bot. Zeit.* 14 (1856) 561, nom. illeg., non *Pothos angustifolius* C. Presl, *Epimel. Bot.* (1849) 243 (Myanmar). — Type: Indonesia, Java, 1802–1818, *Horsfield s.n.* (holo K).
- Pothos exiguiflorus* Schott, *Aroideae* (1856–1857) 21, t. 41. — Type: India, Maharashtra, Concan, 1850, *Stocks s.n.* (fl.) (holo K; C).
- Pothos chapelieri* Schott, *Aroideae* (1856–1857) 22, t. 35. — Type: Madagascar, *Chapelier s.n.* (B†?).
- Pothos cognatus* Schott, *Aroideae* (1856–1857) 22, t. 42, syn. nov. — *Pothos scandens* L. var. *cognatus* (Schott) Engl. in A. & C. DC., *Monogr. Phanerogam.* 2 (1879) 84. — Type: India, Meghalaya, Khasia Hills, *Hooker & Thomson s.n.* (holo K).
- Pothos decipiens* Schott, *Bonplandia* 7 (1859) 165. — Type: India, W Bengal, probably near Calcutta, *Voigt s.n.* (holo C).
- Pothos fallax* Schott, *Prodr. Syst. Aroid.* (1860) 560. — Type: Indonesia, Kalimantan, Bangar-massing, 1857–1858, *Motley* 1194 (holo K).
- Pothos scandens* L. forma *angustior* Engl., *Bot. Tidsskr.* 24 (1902) 272, syn. nov. — Lectotype selected here: Thailand, Klong Munse, 7 Feb. 1900, *Schmidt* 853 (C). In describing forma *angustior*, Engler cited unnumbered material collected by *Kunstler* ('*Dr King's collector*') in Perak, Malaysia, but then cited 'Koh Chang, Klong Munse', a locality pertinent to the *Schmidt* 853 collection cited here. There are sheets at K and P [*Kunstler* ('*Dr King's collector*') 8274] that match the protologue as to morphology, but not as to locality. Since the *Schmidt* 853 collection matches both the morphology and the locality of the protologue I select this to be the lectotype.
- Pothos scandens* L. var. *helperianus* Engl. in Engl., *Pflanzenr.* 21 (IV.23B) (1905) 26, syn. nov. — Lectotype selected here: Myanmar: Taninthari, Mergui, Myanmar, between Moulmine and Martaban, *Helper sub Herb. East India Co. no. 5942* (K, P). Engler cited two syntypes in proposing var. *helperianus*. One of these (*Helper sub Herb. East India Co. no. 5944*) is the type of *P. angustifolius* C. Presl, the other (*Helper sub Herb. East India Co. no. 5942*) was intended by Presl to be the type *P. microphyllus*. However, *P. microphyllus* C. Presl (1849) is predated by *P. microphyllus* Hook. (1829) and is illegitimate. Thus the specimen is available to stand as the lectotype of Engler's var. *helperianus*.

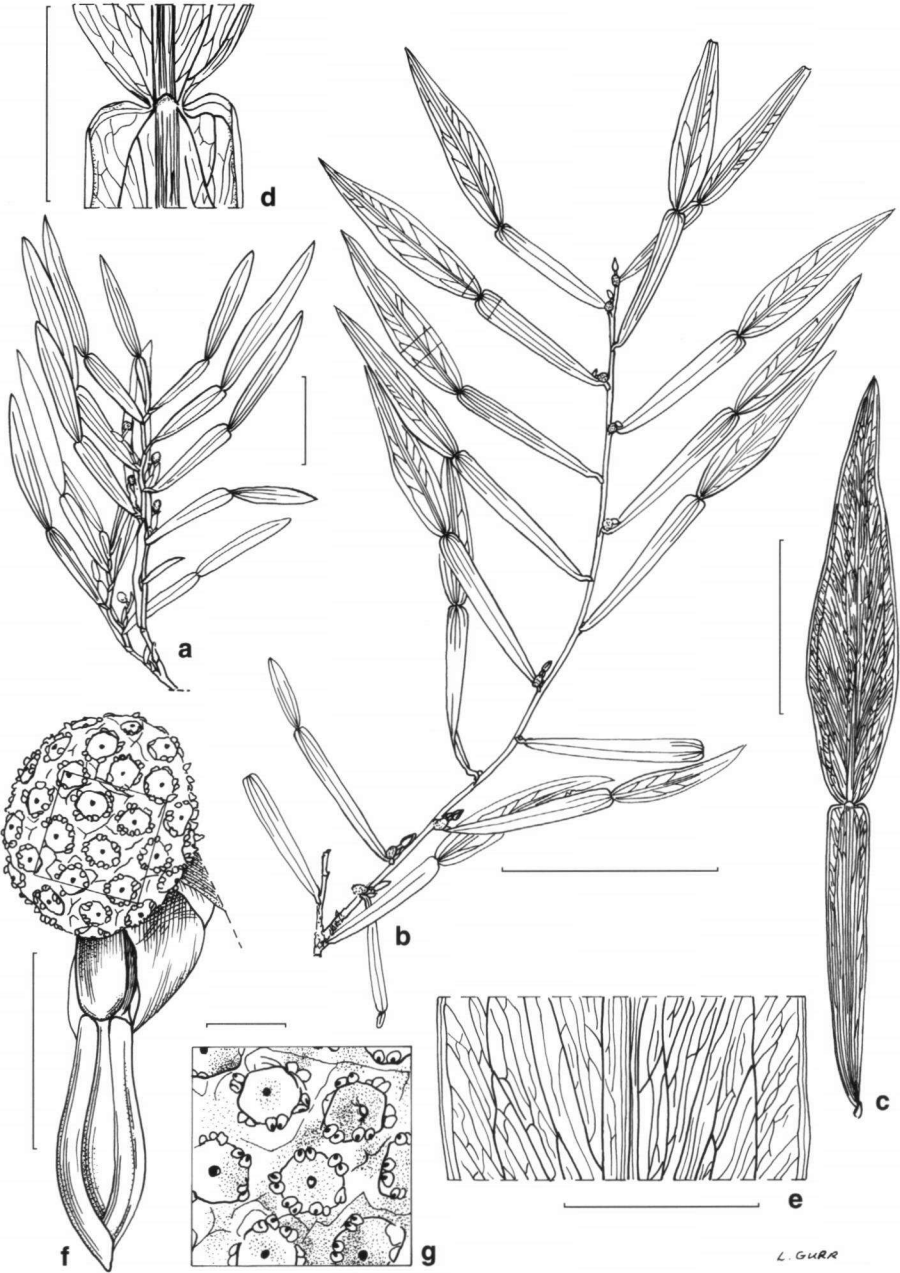


Fig. 9a. *Pothos scandens* L. a. Fertile shoot; b. fertile shoot; c. whole leaf; d. detail of junction of lamina and petiole; e. venation detail; f. inflorescence; g. detail of spadix (a: *Helper 5943*; b–e: *Collins 1730*; f & g: *Bogner 156*). — Scale bar to a = 20 mm; to b = 100 mm; to c = 40 mm; to d & e = 10 mm; to f = 5 mm; to g = 1 mm.



Fig. 9b. *Pothos scandens* L. a. Eocaul; b. juvenile shoot; c. juvenile shoot, later stage; d. mature sterile shoot (a-d: Bogner 407). — Scale bar to a-d = 30 mm.

*Pothos hermaphroditus* (Blanco) Merr., Sp. Blancoan. (1918) 90, syn. nov. — *Batis hermaphrodita* Blanco, Fl. Filip. ed. 1 (1837) 791. — Type: Neotype designated here: Philippines, Luzon, Laguna Prov., Mt Maquiling, Nov. 1912, Merrill, Sp. Blanco. No. 57 (K). In proposing *Batis hermaphrodita* Blanco cites no type. Merrill selected his collection Sp. Blanco. No. 57 to represent Blanco's *Batis hermaphrodita* (i.e. an epitype sensu Art. 9.7). I have chosen to neotypify Blanco's name *Batis hermaphrodita* on this specimen.

[*Pothos auriculatus* S.Y. Hu, nom. nud. in sched. GH et MO.]

[*Pothos leschenaultii* Buchet, nom. nud. in sched. P.]

[*Pothos nosibeensis* Buchet, nom. nud. in sched. L et P.]

[*Pothos scandens* L. var. *falconeri* Buchet, nom. nud. in sched. P.]

[*Pothos scandens* L. var. *godefroyi* Buchet, nom. nud. in sched. P.]

[*Pothos scandens* L. var. *macrospadix* Buchet, nom. nud. in sched. P.]

Moderate to rather large, slender to moderately robust, homeophyllous, root-climbing liane to 6 m. Eocaul monopodial, foraging and weakly climbing, apparently of indeterminate length but almost always terminating through meristematic damage and reiterating from one or more lateral buds, leaves congested, subshingling but not different in shape to those of adult shoots; stem of juvenile shoot to 4 mm diam., weakly angled or terete in cross section, leaves congested; stem of mature sterile shoot to 10 mm diam., weakly 4-angled or slightly compressed-terete in cross section, mid-green, becoming greyish brown with age, drying almost black, at first somewhat densely clothed with leaves, later becoming naked, naked portions with prominent, 70 mm distant nodes; fertile shoot often branching to four or more orders, stem to 5 mm diam., densely clothed with leaves, older portions naked at the base to approximately half their length, naked portions with prominent stepped nodes to 30 mm distant. *Leaves* when fresh bright to deep-green adaxially, paler abaxially, air drying dull green to brownish; petiole 20–140 by 5–20 mm, broadly winged, obovate-oblong to linear-oblong, with 2 or 3 secondary veins and numerous veinlets per side, all veins prominent, especially in dried material, base decurrent, apex truncate, rounded or auriculate; lamina 20–100 by 30–140 mm, ovate to elliptic or lanceolate with 2 intramarginal veins per side, these arising from the base and either reaching the leaf tip or merging into a prominent submarginal collecting vein, all additional veins arising obliquely from the midrib, remaining parallel with numerous veins arising from them, base rounded to acute, apex attenuate-mucronate. *Flowering shoot* much abbreviated, arising from most of the mid- to distal leaf axils of fertile shoots, bearing a minute prophyll and a few 3–10 mm, sequentially longer, cataphylls. *Inflorescence* solitary; peduncle 3–15 by 0.5–2 mm, slender, erect to spreading, green to purple-tinged; spathe 4–8 by 4–7 mm, ovate, concave, margins variously inrolled, base short or somewhat long-clawed, apex rounded to acute with a tiny rather stout mucro, greenish to maroon; spadix stipitate; stipe 5–10 by c. 1 mm, terete in cross section, erect, the distal part erect to bent through 270°, greenish to maroon; fertile portion 4–10 by 3.5–10 mm, globose or ovoid to subclavate, yellow-green to off-white. *Flowers* c. 1–2 mm diam.; tepals 1 by 0.3 mm, oblong-cymbiform, yellow-green to dirty white, apices fornicate, triangular, truncate. *Stamens* 1–4 by c. 0.5 mm, filaments strap-shaped, thecae c. 0.2 mm diam. *Ovary* 1.6 by 0.25 mm, compressed angular-ellipsoid, yellow-green to dirty white; stylar region truncate; stigma prominent, punctiform. *Infructescence* with 1–5 berries; fruit 10–17.5 by 10–14 mm, obclavate, mid-green ripening to deep scarlet. *Seeds* c. 3–6 mm diam., ellipsoid to compressed-globose.

Distribution — Madagascar, Comoros, Seychelles, India (Andaman and Nicobar Islands, Assam, Bihar, Goa, Karnataka, Kerala, Maharashtra, Mahe, Meghalaya, Orissa, Sikkim (?), Tamil Nadu, Tripura, West Bengal), Nepal (?), Sri Lanka, Bangladesh, Myanmar, Thailand, Lao P.D.R., Vietnam, Cambodia, China (Yunnan), Indonesia (Java, Kalimantan, Maluku, Nusa Tenggara, Sumatera), Malaysia (Peninsular, Sabah), Singapore (?), Brunei, Philippines.

Habitat & Ecology — On trees and rocks in primary and secondary wet to dry lowland to hill evergreen tropical to subtropical forest, occasionally on sea cliffs, in hedges or scrub or in coconut plantations, on a variety of substrates including clay, limestone and granite; altitude 0–2100 m.

Vernacular names — Cha-kep (Lao), Kaw Kin Boi-lek, Kaw Kin Bai Noi (Thailand: Trang), Ma nok hon (Lao: Louangphrabang), T'Kap (Thailand: Chon Buri), Wai mai (Myanmar: Shan, Shan dialect), Wai So Toi (Thailand: Chon Buri), Wai-ta-moi (Thailand: Trat).

Ethnobotany — Thailand: Used in medicine as a blood coagulant, principally for wounds. Fruits and leaves made into a compress [*Keenan et al. 3281* (GH)]. Myanmar: Infusion of the stems and leaves drunk as a 'tea' by the Shan [*Robertson 250* (K)].

Notes — *Pothos scandens* has a wide geographical range and a bewildering range of morphological variation that has resulted in the recognition of many segregate taxa. Although most of these segregate taxa fit into *P. scandens* without stretching its boundaries too greatly, *P. angustifolius* C. Presl, a much branched low-growing plant with extremely slender leaves and minute inflorescences, is exceptional. To date plants matching the type of *P. angustifolius* have only been collected along the Myanmar (Tenasserim) Andaman Sea coast, although similar but less congested plants have been found in Thailand. Further collections of this plant are required. Ideally, plants should be brought into cultivation to determine if the habit is retained or whether it is an artefact of the plants', presumably harsh, environment.

*Pothos scandens* is unmistakable in its typical aspect, carrying rather small inflorescences on bent peduncles. However, as noted above, the species is highly variable. Some populations comprise high-climbing plants bearing tiny inflorescences (*Van Beusekom & Smitinand 2150*, *Geesink et al. 7250*, *Larsen et al. 44267* and *Smitinand 2959* are representative of this element). Other populations (collections include e.g. *Phusomsaeng 188*, *Larsen 9524*, *Kasin 366*) produce rather large inflorescences not exhibiting the bent peduncle until very late anthesis or during early infructescence development. Such large-inflorescenced plants are often collected as '*P. roxburghii*' (a distinct species restricted to Sumatera).

*Geographically representative selection of collections studied:*

CAMBODIA: Kâmpong Chhnang: Kâmpong Chhnang, June 1875, *Godefrey-Lebeuf s.n.* (fl.) (K).  
CHINA: Yunnan: Xichuanbanna, Mengla, Mengla Forest Park, 24 June 1995, *Boyce 1048* (fl.) (K); *Forrest 12138* (fl.) (K).

LAO P.D.R.: Louangphrabang: Louangphrabang, N 019° 52', E 102° 08', *Spire 846* (fl.) (P). – Savannakhet: KM 20, Highway 10, near Savannakhet, N 016° 33', E 104° 45', 20 Feb. 1925, *Poilane 12027* (fl.) (P, SAI).

MYANMAR: Arakan: Myebon, 20 Feb. 1958 (fl.), *McKee 6098* (fl.) (K, P). – Kachin: Sumprabum, from Sumprabum to Kumon range, Mapi-Zup confluence, N 026° 40', E 097° 20', 17 Jan. 1962. *Keenan et al. 3281* (fl.) (GH). – Mon: Moulmein, Kyanktalon, Jan. 1934, *Dickason 6834* (GH). – Shan: Keng Tung, Möng Nai, 6 March 1911, *Robertson 250* (fl.) (K). – Taninthari: Mergui, 13 Oct.

1838, *Helper s.n.* (fl.) (*sub Herb. East India Co. 5942*) (K, syntype of *Pothos scandens* L. var. *helperianus* Engl.). – Tenasserim: *Helper s.n.* (fl.) (*sub Herb. East India Co. 5944*) (C, K; syntype of *Pothos scandens* L. var. *helperianus* Engl.). – Yangon: Yangon, Feb. 1934, *Barnard 2* (fl.) (BM).

THAILAND: N1. Chiang Mai: Mae Sariang, Mae Hong Song, Doi Hua Kar-Mint, 25 April 1973, *Sutheesorn 2371* (fl.) (BK). – N2. Chiang Rai: Chiang Rai, 23 Jan. 1970, *Sutheesorn 1405* (fl.) (BK). – N7. Lampang: Me Ngao, 26 Aug. 1922, *Winit 745* (fl.) (BKF, K). – N8. Phrae: Mae Ban, 15 Sept. 1929, *Franck 1286* (fl.) (C, P). – N11. Sukhothai: Khiri Mat, Khao Luang, 20 June 1989, *Parikarn & Prayad 30* (fl.). – NE16. Petchabun: Ta Duang, 4 March 1931, *Kerr 20353* (fl.) (BK, K, P). – NE17. Loei: Wang Supung, Ban Na Luang, 11 April 1968, *Chermisvivathana 817* (fl.) (BK). – E27. Chaiyaphum: Phu Khieo, N 016° 26', E 102° 05', 3 Aug. 1972, *Larsen et al. 31300* (fl.) (AAU, BKF, P). – SW39. Phetchaburi: Chan Daen, 27 Jan. 1969, *Vacharapong 396* (fl.) (BK). – C47. Nakhon Nayok: Nang Rong Falls, 10 km north of Nakhon Nayok, 10 Dec. 1961, *Nicolson 1602* (fl.) (B, BK, K, L, P, US). – SE57. Prachin Buri: Ban Bung Hills, 2 Aug. 1966, *Larsen et al. 1137* (fl.) (AAU, BKF, GH). – SE58. Chachoengsao: Khao Tak Groep, N 013° 20', E 101° 52', 6 Nov. 1993, *Larsen et al. 44267* (fl.) (AAU). – SE59. Chon Buri: Si Racha, Ban Hub Bon, 13 Jan. 1917, *Collins 473* (fl.) (K, P). – SE60. Rayong: Ban Phe, beach road from Ban Phe to Laem Mae Phim, N 012° 37', E 101° 10', 23 April 1987, *Soejarto et al. 6038* (fl.) (GH). – SE61. Chantaburi: Kao Soi Dao, 12 Nov. 1969, *Van Beusekom & Smitinand 2150* (fl.) (AAU, BKF, C, P). – SE62. Trat: Koh Chang, Klong Son, 20 Dec. 1961 (fl.), *Nicolson 1627* (fl.) (B, BK, K, L, P, US). – PEN66. Phangnga: Kao Prame, 27 April 1967, *Sutheesorn 1449* (fl.) (BK). – PEN67. Phuket: Ko Pah, Ban Krap, 12 Dec. 1917, *Haniff & Nur SFN 2908* (fl.) (K, SING). – PEN68. Krabi: Ao Luk, 16 March 1930 (fl.), *Kerr 18580* (fl.) (BK, K, L, P). – PEN69. Nakhon Si Thammarat: Khao Luang N.P., Gahrome Falls, 15 Sept. 1985, *Maxwell 85-886* (fl.) (AAU, BKF, GH, PSU, UKMB). – PEN71. Trang: Southern Botanic Garden, 22 March 1993, *Chantaranothai et al. 1296* (fl.) (K, KKU, TCD). – PEN74. Pattani: Ban sai Kao, 30 March 1928, *Kerr 14891* (fl.) (BK, K, L, P).

VIETNAM: Ba Ria–Vung Tau: Con Son Archipelago, Con Son Island, Con Dao N.P., N 008° 42', E 106° 37', 20 March 1997, *Boyce 1198* (fl.) (HN, K, M). – Gia Lai: K' Bang, Sopoai, 17 May 1985, *LX-VN 2030* (fl.) (LE). – Ho Chi Minh: Phu Mi, Nov. 1874, *Godefroy-Lebeufs.n.* (fl.) (P). – Ho Chi Minh/Song Be: Route between Ho Chi Minh and Bien Hoa, 22 Jan. 1865, *Lefèvre 117* (fl.) (P). – Khanh Hoa: Between Na Trang and Khanh Hoa, N 012° 15', E 109° 11', 15 Jan. 1923, *Poilane 5239* (fl.) (P, SAI). – Kon Tum: Dak Glai, c. 3–4 km west of Dak Glai, 26 Nov. 1995, *Averyanov et al. VH 1964* (fl.) (HN). – Kien Giang: Tho Chu, N 009° 01', E 103° 26', 8–10 April 1987, *Averyanov & Kodryavtseva 1030* (fl.) (LE). – Ninh Thuan: Ca Na, N 011° 23', E 108° 50', 22 Oct. 1925, *Poilane 12526* (fl.) (P, SAI). – Tay Ninh: Tay Ninh, N 011° 18', E 106° 06', 22 April 1938, *Poilane & Müller 37* (fl.) (AAU, BKF, K, L, P).

### Subgenus *Allopothos*

*Pothos* subg. *Allopothos* Schott, Aroideae (1856–1857) 24.

*Pothos* sect. *Allopothos* (Schott) Engl. in A. & C. DC., Monogr. Phanerogam. 2 (1879) 88.

*Pothos* ser. *Longivaginati* Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 22.

*Pothos* ser. *Brevivaginati* Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 22.

*Pothos* ser. *Goniuri* (C. Presl) Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 22.

### 10. *Pothos curtisii* Hook. f. — Fig. 10

*Pothos curtisii* Hook. f., Fl. Brit. India 6 (1893) 554. — Lectotype selected here: Malaysia, Perak, Larut, *Kunstler* ('*Dr King's collector*') 3887 (K). Hooker cited a number of specimens in describing *P. curtisii* [i.e. Malaysia, Perak, Larut, *Kunstler* ('*Dr King's collector*') 4221 (K); Malaysia, Penang, Batu Ferringgi, *Curtis 808* (K); Malaysia, Perak, *Scortechini 624a* (K)]. All are unmistakably the same species and the lectotype has been chosen on the basis of it being the best specimen and thus the most useful for typifying the name.



*Pothos peninsularis* Alderw., Bull. Jard. Bot. Buitenzorg III, 1 (1920) 381, syn. nov. — *Pothos latifolius* Hook.f., Fl. Brit. India 6 (1893) 554, nom. illeg., non *Pothos latifolius* L. (1759) (Maluku). — Lectotype selected here: Malaysia, Perak, Larut, *Kunstler* ('Dr King's collector') 3903 (K). Hooker cited two specimens in proposing *P. latifolius* [the other is Malaysia, Perak, Taiping (Taiping) Larut, *Kunstler* ('Dr King's collector') 8493 (K)]. Van Alderwerelt, in publishing his *nomen novum* did not make a selection. As with *P. curtisii* I have taken the pragmatic approach of choosing the best specimen as the lectotype.

*Pothos kunstleri* Hook.f., Fl. Brit. India 6 (1893) 554, syn. nov. — Lectotype selected here: Malaysia, Perak, Larut, *Kunstler* ('Dr King's collector') 2754 (K). Again Hooker in proposing the name *P. kunstleri* cited several clearly identical collections [the others are Malaysia, Perak, Larut, Sunkei ('Sunkei Perak'), *Kunstler* ('Dr King's collector') 3012 (K, SING)]. As above, the lectotype is chosen on the basis of being the best collection.

*Pothos maingayi* Hook.f., Fl. Brit. India 6 (1893) 554, syn. nov. — Lectotype selected here: Malaysia, Malacca, 1867–1868, *Maingay* 1538 (fl.) (K). The collection cited is again chosen on the basis of being best of the two [the other being another Malaccan collection: *Maingay* 3041 (K)] and thus the most useful from the point of identification.

Slender, heterophyllous, root-climbing liane to 3 m. Eocaul not observed; stem of juvenile shoot to 1.5 mm diam., terete to slightly angled in cross section, shingle-leaved; stem of mature sterile shoot to 6 mm diam., terete in cross section, mid-green becoming brown with age, leaves scattered, spreading, eventually becoming naked, nodes 7–50 mm distant, mid-green; stem of fertile shoot to 4 mm diam., terete in cross section. *Leaves* when fresh mid-green, paler abaxially, air dried material mid-green to brown; petiole 20–105 by 1–6 mm, slender, canaliculate, rounded abaxially, base decurrent, apex prominently geniculate, older geniculum corky; sheath distinct, prominent, erect, apically ligulate in young growth, ligule later disintegrating, base amplexicaul or decurrent to almost free; lamina 80–260 by 16–95 mm, broadly to narrowly oblong elliptic, 2 intramarginal veins per side, 2–13 mm from lamina margin, arising from just above base of the midrib, remaining  $\pm$  parallel to margin, terminating at the tip of the lamina, base obtuse, apex acuminate to long-acuminate, apiculate, apicule later deciduous. *Flowering shoot* much abbreviated to rarely rather elongated through reiteration, (foliage) leafless or, occasionally, bearing developed but under-size foliage leaves. *Inflorescence* solitary on a reiterating flowering shoot; peduncle 25–65 by 1–4 mm, somewhat robust, strongly curving or straight, the inflorescence held erect, mid-green; spathe 34–67 by c. 10 mm, linear-triangular to narrowly oblong, base rounded, annularly inserted onto peduncle, apex acuminate, slightly rough to smooth, pale brown tinged reddish pink; spadix stipitate; stipe 3–19 by 1–2 mm, terete; fertile portion 35–135 by 0.5–3 mm, very slender-cylindric, occasionally sterile at the tip, pale greyish pink, older inflorescences blackish red. *Flowers* 3 by 2.1 by 1.6 mm, widely scattered, arranged in a lax spiral along the spadix; tepals 1.4 by 1.1 mm, broadly ovate to fornicate, basal portion considerably thickened, excavated, margins hyaline, erose, abaxial surface umbonate. *Stamens* 0.75–0.87 by 0.5 mm at anthesis, filaments strap-shaped, thecae 0.25 by 0.25 mm, oblong-ellipsoid, yellow. *Ovary* 0.5 by 1.13 mm, compressed-globose to hexagonal-turbinate; stylar region massive, truncate; stigma prominent, punctiform. *Infructescence* not observed.

Distribution — Thailand, Peninsular Malaysia, Singapore, Indonesia (Sumatera).

Habitat & Ecology — Wet hill and lowland evergreen forest; altitude 60–600 m.

Notes — For such a distinctive species (the only representative of the remarkable '*luzonensis* group' in continental SE Asia) *P. curtisii* has a chequered taxonomic history;



Fig. 10. *Pothos curtisii* Hook. f. a. Juvenile/mature sterile transition shoot; b. shingle leaf; c. mature sterile lamina venation detail midrib and intermarginal vein; d. venation detail; e. fertile shoot; f. inflorescence; g. detail of spadix (a–g: Boyce 1094). — Scale bar to a = 100 mm; to b & c = 10 mm; to d = 5 mm; to e = 80 mm; to f = 20 mm; to g = 1 mm.

three of its four synonyms were described on the same page of the Flora of British India! Of these synonyms *P. latifolius* Hook. f. (the name most often applied to *P. curtisii*) is illegitimate, being antedated by *P. latifolius* L. Van Alderwerelt was aware of this and published a new name, *P. peninsularis* (Van Alderwerelt, 1920), for Hooker's *P. latifolius*. However, Van Alderwerelt had apparently not appreciated that Hooker had described the same species under four different names. In synonymising Hooker's names one has to take into account that they have priority over that proposed by Van Alderwerelt. Accordingly, I have selected the name *P. curtisii* as the collection with the best syntypes from which to lectotypify the name.

In the review region *P. curtisii* is known from a single collection from an unnamed grid reference (see Jacobs, 1962). The label cites 'Bukit' (the Malay word for hill) but I have been unable to trace such a place and assume that Put was simply indicating a hill in the region of the Thai–Kedah (Malaysian) border.

*Pothos curtisii* is the only species of the *luzonensis* group (see Boyce & Hay, 1998) occurring in the review area and fertile material is unmistakable by the slender spadix and scattered flowers. Sterile specimens may be confused with other species of subg. *Allopothos*, especially those occurring in the same region of Peninsular Thailand (e.g. *P. kingii* and *P. lorispachus*). *Pothos lorispachus* and *P. kingii* have thinly chartaceous leaves, while *P. curtisii* has more coriaceous leaves.

*Specimen studied:*

THAILAND: PEN76. Narathiwat: Bukit (hill) at N 006° 10', E 101° 50', 24 Jan. 1931, Put 3615 (fl.) (K).

### 11. *Pothos kingii* Hook. f. — Fig. 11a, 11b

*Pothos kingii* Hook. f., Fl. Brit. India 6 (1893) 553; Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 38. — Lectotype selected here: Malaysia, Perak, Larut, *Kunstler* ('Dr King's collector') 2723 (K). Hooker cites two collections in describing *P. kingii* [the other being Malaysia, Perak, *Scortechini* 1450 (K)]. That chosen is the better of the two collections and thus the most useful.

*Pothos grandispachus* Ridl., J. Straits Br. Roy. Asiat. Soc. 41 (1904) 48 (as '*grandispatha*'), syn. nov. — Type: Malaysia, Penang, W Hill, *Curtis s.n.* (fl.) (holo SING).

*Pothos ridleyanus* Furtado, Gard. Bull. Sing. 8 (1935) 150, syn. nov. — *Pothos ellipticus* Ridl., J. Straits Br. Roy. Asiat. Soc. 41 (1904) 48, nom. illeg., non *P. ellipticus* Moon ex Miq. (1856) (Sri Lanka). — Lectotype selected here: Malaysia, Pahang, Pahang River, Kuala Tembilang, Aug. 1891, *Ridley s.n.* (fl.) (SING). *Ridley's* illegitimate *P. ellipticus* name was based on two clearly identical syntypes [the other is: Malaysia, Pahang, Pulau Tawar, Aug. 1891, *Ridley s.n.* (fl.) (SING)]. Both are good specimens, that chosen has better preserved inflorescences.

Moderate, slender, heterophyllous, root-climbing liane to 7 m. Eocaul not observed; stem of juvenile shoot to 3 mm diam., terete in cross section, shingle-leaved; stem of mature sterile shoot to 8 mm diam., terete in cross section, mid-green, becoming brown with age, mostly densely clothed with leaves but stems eventually becoming naked, naked portions with prominent, 50–80 mm distant nodes; fertile shoot sparsely branched, stem to 5 mm diam., terete in cross section, densely clothed with leaves; foraging shoot subterete in cross section, to 1 mm diam., cataphylls falling swiftly and flagellum mostly naked with prominent nodes to 80 mm distant. *Leaves* when fresh bright to mid-green adaxially, slightly paler abaxially, stiffly chartaceous, air drying dull green

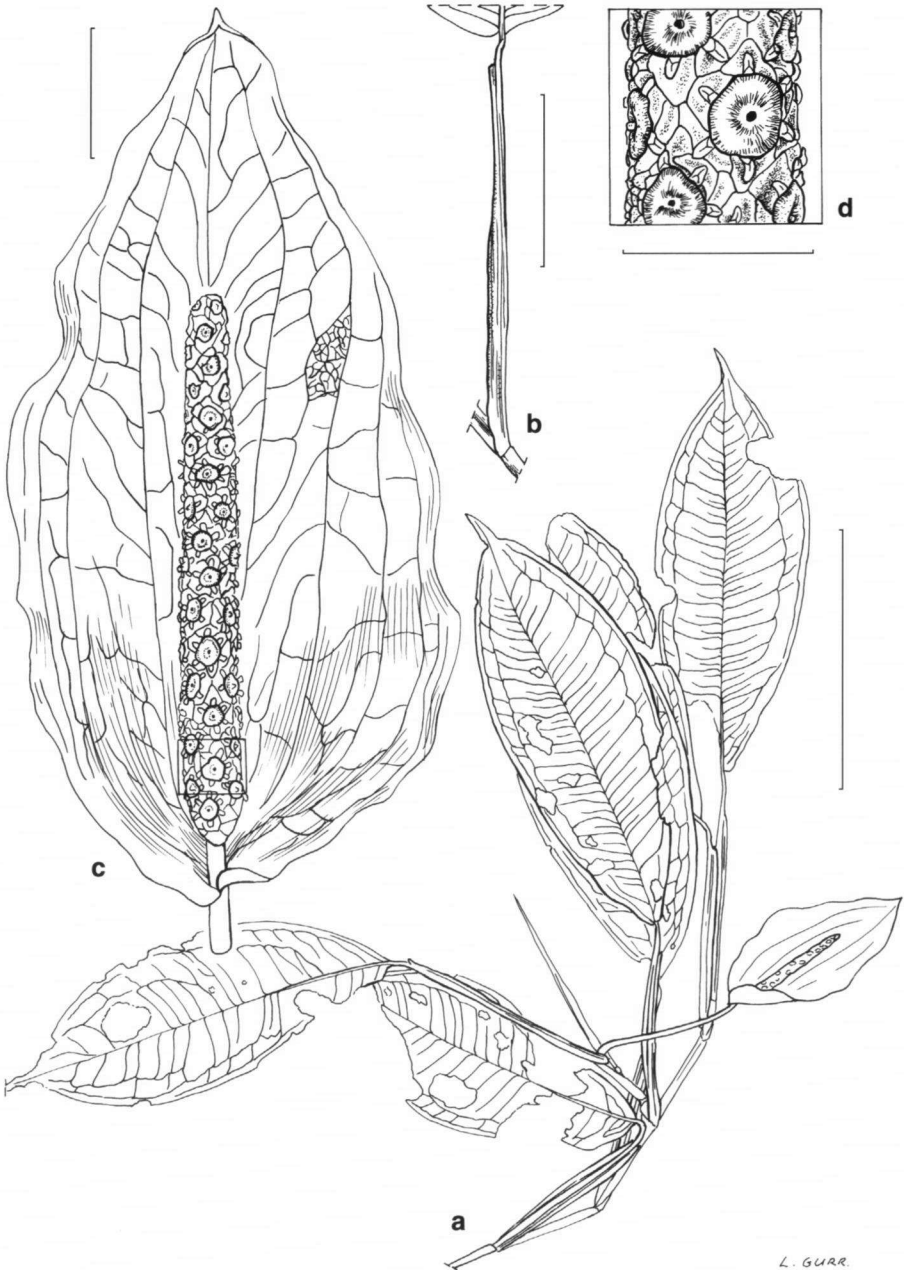


Fig. 11a. *Pothos kingii* Hook.f. a. Fertile shoot; b. petiole detail; c. inflorescence; d. detail of spadix (a-d: Boyce 1222). — Scale bar to a = 80 mm; to b = 40 mm; to c = 10 mm; to d = 5 mm.

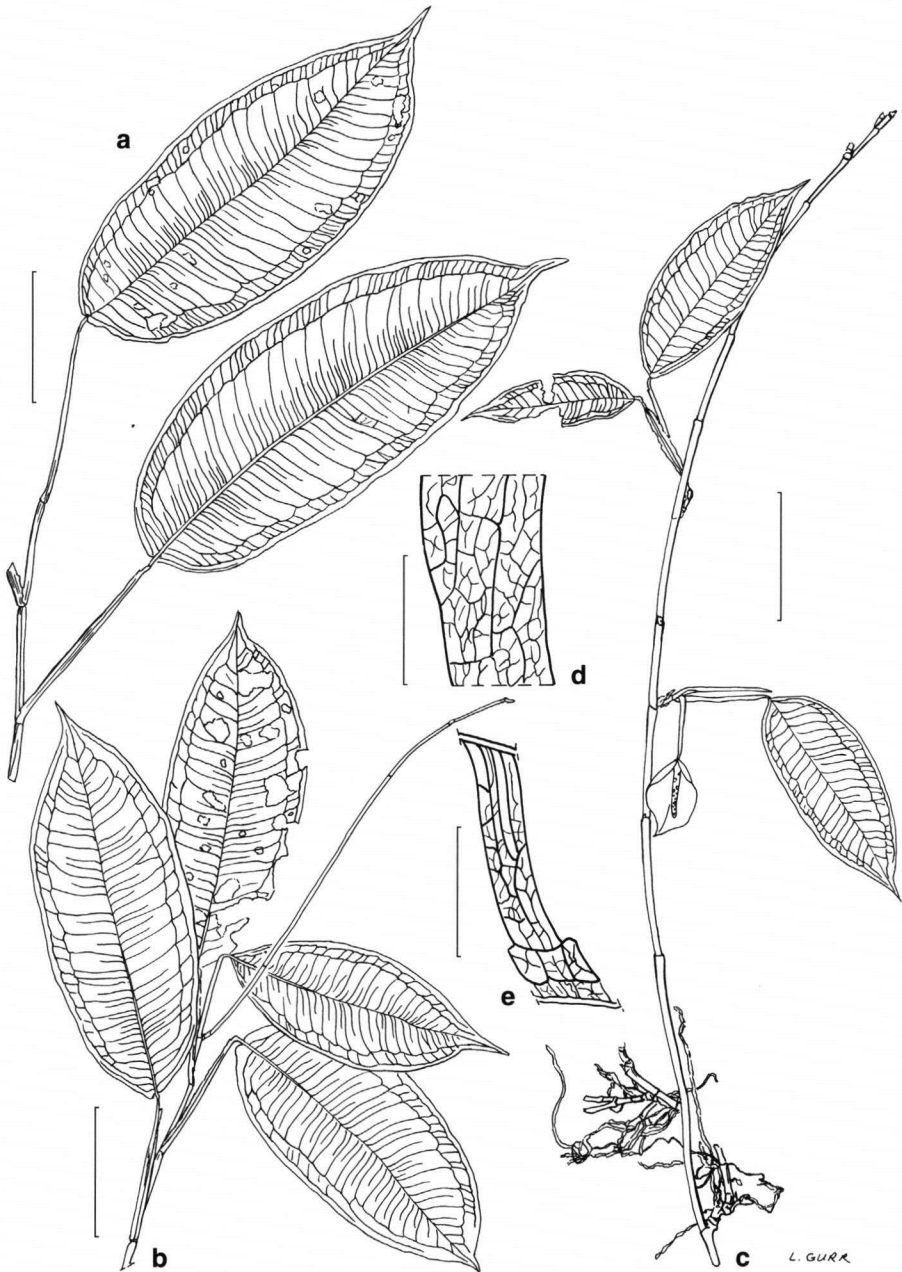


Fig. 11b. *Pothos kingii* Hook. f. a. Mature sterile shoot; b. lower part of foraging shoot; c. flowering shoot arising directly from mature sterile shoot; d. venation detail; e. venation detail with midrib and intermarginal vein (a-e: Boyce 1222). — Scale bar to a = 60 mm; to b & c = 80 mm; to d = 15 mm; to e = 5 mm.

with the midrib pale yellow and prominently raised; petiole 40–120 by 2–2.5 mm, slender, sheath extending to geniculum, clasping basally on juvenile and mature sterile shoots, prominent and sheathing to 4/5 of its length on fertile shoots; lamina 50–250 by 23–90 mm, ovate to elliptic or lanceolate with 3 intramarginal veins per side, the lowermost arising from the base, subsequent veins arising from the lower part of the midrib, outer intramarginal vein remaining very close and parallel to margin, the second and third progressively nearer to the midrib, all reaching the leaf tip, base acute to rounded, apex attenuate-mucronate, acute or attenuate, minutely tubulate. *Flowering shoot* elongated, leafy, arising from most of the mid- to distal leaf axils of fertile shoots. *Inflorescence* solitary; peduncle 20–50 by 1.5–2.5 mm, stout, reflexed c. 90° at the base, the inflorescence held inverted beneath the shoot, yellow to orange-brown; spathe 40–100 by 25–60 mm, ovate, deeply cucullate, base slightly decurrent on the peduncle, apex acute, deep purple inside and out, softly-leathery and rather prominently net-veined; spadix sessile, 25–70 by 3–8 mm, cylindrical, deep purple-brown. *Flowers* c. 1 mm diam.; tepals 1 by 0.3 mm, oblong-cymbiform, deep purple-brown, apices fornicate, triangular, truncate, minutely three lobed. *Stamens* 1–4 by c. 0.5 mm, filaments strap-shaped, thecae c. 0.2 mm diam., creamy-yellow. *Ovary* 1–1.5 by 0.25–0.75 mm, compressed angular-ellipsoid, yellow-green to dirty white; stylar region truncate, centrally depressed; stigma prominently punctiform. *Infructescence* not observed.

Distribution — Thailand, Peninsular Malaysia.

Habitat & Ecology — Shady to open areas in wet primary evergreen forest, often on steep slopes; altitude 50–450 m.

Notes — Unique in the review area by the deeply cucullate, softly leathery, deep purple spathe, *P. kingii* is restricted to southern Peninsular Thailand and a few localities in Peninsular Malaysia where it occurs in wet forest. Fertile specimens are instantly recognizable but sterile material could be confused with vegetatively similar *P. lorispatus* (to which *P. kingii* is allopatric), and *P. curtisii*. The latter is known from one locality in Peninsular Thailand (see below) but is widespread and locally common in Peninsular Malaysia.

*Pothos kingii* belongs to a group of species characterised by thickened, often sharply deflexed long peduncles and often cucullate, somewhat leathery spathes; *P. lancifolius* Hook. f., *P. barberianus* Schott (Peninsular Malaysia, Borneo), *P. hosei* Rendle (Borneo), *P. atropurpurescens* M. Hotta (Borneo) belong here also. It is quite extraordinary that such a distinctive species could have been described on three separate occasions, especially given that the types are all good specimens and are, it would appear, not open to misinterpretation.

*Geographically representative selection of collections studied:*

THAILAND: PEN64. Ranong: Hard Him Dam, N 009° 20', E 098° 25', 25 April 1974, *Larsen & Larsen 33350* (fl.) (AAU). — PEN65. Surat Thani: Khao Sok N.P., trail to Nam Tok Sib Aid Chan, 15 Sept. 1994, *Boyce 962* (fl.) (BKF, K). — PEN69. Nakhon Si Thammarat: Lansagah, Khao Luang N.P., Nam Tok Charone, N 005° 50', E 101° 50', 14 April 1985, *Ramari 35* (fl.) (BKF, L, PSU, UKM). — PEN73. Songkhla: Rattapoom, Nam Tok Bori Pat, 16 Oct. 1984, *Maxwell 84-338* (fl.) (BKF, GH, P, PSU, UKM). — PEN76. Narathiwat: Sungei Kolok, Nikom Waeng, 26 Feb. 1974, *Larsen & Larsen 32619* (fl.) (AAU, B, BKF, K, L, MO).

**12. *Pothos lancifolius* Hook. f. — Fig. 12**

*Pothos lancifolius* Hook. f., Fl. Brit. India 6 (1893) 554; Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 40. — Type: Malaysia, Perak (probably Bk Larut), *Scortechini 576* (fl.) (holo K; SING). *Pothos penicilliger* Gagnep., Notul. Syst. 9 (1941) 135, syn. nov. — Type: Vietnam, Col des Nuages, near Tourane (modern Danang), *Poilane 8089* (fl.) (holo P; GH, SAI).

Moderate, slender to somewhat robust, heterophyllous, root-climbing liane to 4 m. Eocaul not observed; stem of juvenile shoot to 3 mm diam., terete in cross section, shingle-leaved; stem of mature sterile shoot to 6 mm diam., terete in cross section, mid-green, becoming brown with age, densely clothed with leaves, but stems eventually becoming naked, naked portions with prominent, 50–80 mm distant nodes, often producing long, adherent feeding roots, these strongly flattened with a prominently warty epidermis; stem of fertile shoot to 4 mm diam., terete in cross section, densely clothed with leaves. *Leaves* when fresh mid-green adaxially, slightly paler abaxially, stiffly chartaceous, air drying dull greenish brown, midrib paler, prominently raised; petiole 40–140 by 1.5–2 mm, slender, sheath rather prominent, extending to just below geniculum, basally clasping, apically briefly ligulate; lamina 100–250 by 25–100 mm, ovate to elliptic or narrowly lanceolate, with 2 intramarginal veins per side, the lowermost arising from the base, the next arising from the lower part of the midrib, outer intramarginal vein remaining very close and parallel to margin, inner vein c. 5 mm distant, both reaching the leaf tip, base rounded, apex long-attenuate, attenuate or acute, minutely tubulate. *Flowering shoot* abbreviated, leafy, arising from most of the mid- to distal leaf axils of fertile shoots. *Inflorescence* solitary, occasionally paired; peduncle, 15–50 by 1.5–3 mm, stout, spreading, dull greenish yellow; spathe 25–100 by 10–40 mm, lanceolate, slightly cucullate, base barely decurrent on the peduncle, apex acuminate, green to purplish-green, slightly softly-leathery; spadix sessile, 15–50 by 3–9 mm, cylindrical, dark to yellow-green. *Flowers* c. 1.5 mm diam.; tepals 1 by 0.3 mm, oblong-cymbiform, green, apices slightly fornicate, triangular, truncate. *Stamens* 1–4 by c. 0.5 mm, filaments strap-shaped, thecae c. 0.2 mm diam., creamy-yellow. *Ovary* 1–1.5 by 0.25–0.75 mm, compressed angular-ellipsoid, green; stylar region turbinate; stigma disc-like, prominent. *Infructescence* with numerous berries, mostly born towards the bottom of the spadix; fruit 10–15 by 10–11 mm, ellipsoid- to bottle-shaped, ripening deep scarlet, with prominent basal leathery and chartaceous tepal remains and a large stigmatic remnant. *Seeds* c. 4–6 by 2–3 mm diam., ellipsoid.

Distribution — Peninsular Malaysia, Vietnam.

Habitat & Ecology — Degraded dry to damp seasonal evergreen hill forest on clay soils over granite; altitude 750–1300 m.

Notes — The type of *P. penicilliger* is an exceptionally robust specimen of *P. lancifolius*, a species hitherto considered to be restricted to Peninsular Malaysia. Despite the dimensions of the type, other Vietnamese collections of '*P. penicilliger*' seen match very well typical *P. lancifolius*. I have no hesitation in assigning *P. penicilliger* to Hooker's earlier taxon.

*Pothos lancifolius* is morphologically most similar to *P. kingii*. It may be distinguished from *P. kingii* by the lanceolate, not cucullate, spathe and the bottle-shaped fruits with large, broad, stigmatic remains. Confusion may occur with the rarely-collected *P. touranensis* from which fertile *P. lancifolius* is distinguishable by the smaller inflores-

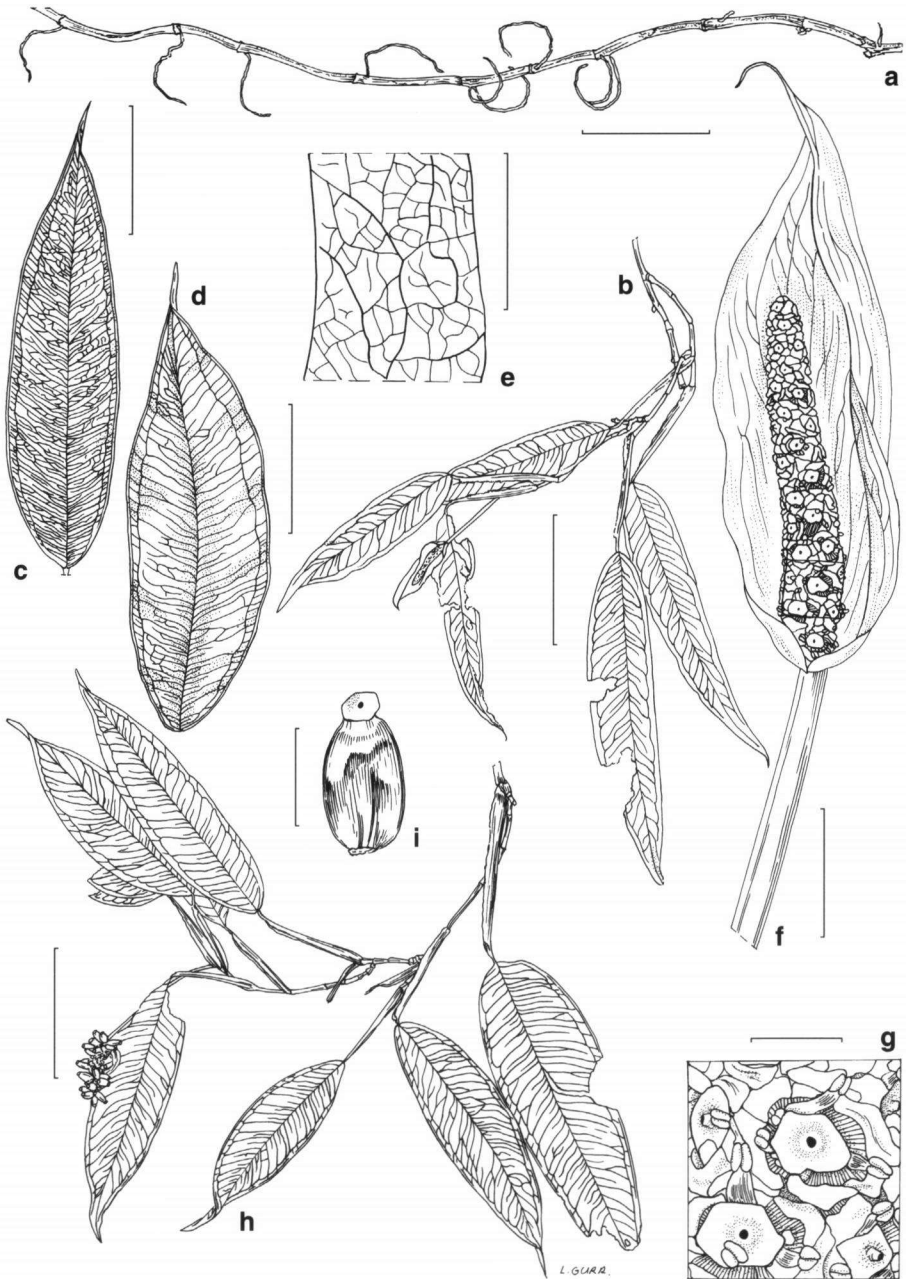


Fig. 12. *Pothos lancifolius* Hook. f. a. Older leafless sterile mature shoot; b. fertile shoot; c. leaf: minus petiole; d. leaf: minus petiole; e. venation detail; f. inflorescence; g. detail of spadix; h. fertile shoot: bearing infructescence; i. mature berry (a & c: *Poilane 8089*; b, f & g: *Vu Xuan Phuong 1190*; d & e, h & i: *Soviet-Vietnam Expedition 4120*). — Scale bar to a–c = 40 mm; to d & h = 60 mm; to e = 3 mm; to f & i = 5 mm; to g = 1 mm.



cences carried on much shorter peduncles; see *P. touranensis* for further discussion of this character. Confusion is also possible with *P. lorispachus*, from which *P. lancifolius* may be separated by the lanceolate (vs. lorate) spathe, the sessile spadix and the bottle-shaped (vs. ovoid, obtuse) fruits.

*Geographically representative selection of collections studied:*

VIETNAM: Gia Lai: K' Bang, Son Lang, 17 June 1988, *Vu Xuan Phuong 1190* (fl.) (HN). — Quang Nam–Da Nang: Col des Nuages, 18 Sept. 1923, *Poilane 8089* (fl.) (type of *Pothos penicilliger*, holo P; GH, MO, SAI).

**13. *Pothos lorispachus* Ridl.** — Fig. 13a, 13b

*Pothos lorispachus* Ridl., J. Straits Br. Roy. Asiat. Soc. 86 (1922) 310 (as '*lorispatha*'). — Type Malaysia, Selangor, Batu Caves, *Ridley s.n.* (fl.) (holo SING; K).

Moderate, robust, (heterophyllous?), root-climbing liane to 8 m. Eocaul and juvenile shoot not observed; stem of mature sterile shoot to 6 mm diam., terete in cross section, stem dark, glossy green, becoming brown with age, moderately clothed with leaves, eventually becoming naked, naked portions with somewhat prominent, 50–100 mm distant nodes, often producing long, free and adherent feeding roots, these terete with a slightly rough, occasionally minutely spiny, epidermis; fertile shoots seldom branching, stem of fertile shoot to 4 mm diam., densely clothed with leaves; foraging shoot subterete in cross section, to 1 mm diam., proximally with a few oblong cataphylls and reduced foliage-leaves but soon becoming naked with slightly prominent nodes to 100 mm distant. *Leaves* when fresh mid-green adaxially, slightly paler abaxially, stiffly but thinly chartaceous, air drying dull greenish; petiole 30–70 mm long, slender, sheath somewhat prominent, extending to just below geniculum, basally clasping, apically briefly auriculate to slightly ligulate; lamina 100–340 by 25–100 mm, oblong-elliptic, often falcate, unequal, occasionally quite strongly so, with 2 intramarginal veins per side, the lowermost arising from the base, the next arising from the lowest part of the midrib, outer intramarginal vein remaining very close and parallel to margin, inner vein c. 10 mm distant, both reaching the leaf tip, base rounded, apex acute to acuminate, very briefly tubulate. *Flowering shoot* abbreviated, usually leafless but with 1–several well-developed cataphylls, very occasionally with one or more fully developed but reduced leaves, arising from below the leaf axils of fertile shoots. *Inflorescence* solitary but flowering shoots almost always reiterating and thus several inflorescences at varying degrees of developmental maturity often present; peduncle 27–50 by 2–3 mm, moderately stout, erect or curving and ultimately ascending and the inflorescence held erect, dull green; spathe 25–100 by 5–15 mm, lorate, spreading, base auriculate, auricle margins inrolled, barely decurrent on the peduncle, apex obtuse, acuminate, mid-green; spadix stipitate; stipe 8–15 by c. 2 mm, slender, terete, lime green; fertile portion 50–65 by 3–4 mm, cylindrical to tapering slender-cylindrical, straight to slightly curved, base unequal, slightly cochleate, creamy-yellow. *Flowers* c. 1.5 mm diam.; tepals 1 by 0.3 mm, oblong-cymbiform, pale yellow, apices slightly fornicate, triangular, truncate, margins minutely reflexed. *Stamens* 1–4 by c. 0.5 mm, filaments strap-shaped, thecae c. 0.2 mm diam., pale yellow. *Ovary* 1–1.5 by 0.25–0.75 mm, compressed globose, yellow-green; stylar region rounded; stigma punctiform. *Infructescence* with numerous berries; fruit 10–15 by 5–8 mm, obclavate to ellipsoid,



Fig. 13a. *Pothos lorispatus* Ridl. a. Mature sterile shoot; b. fertile shoot; c. inflorescence; d. detail of spadix (a–d: *Boyce 1218*). — Scale bar to a & b = 80 mm; to c = 20 mm; to d = 60 mm.

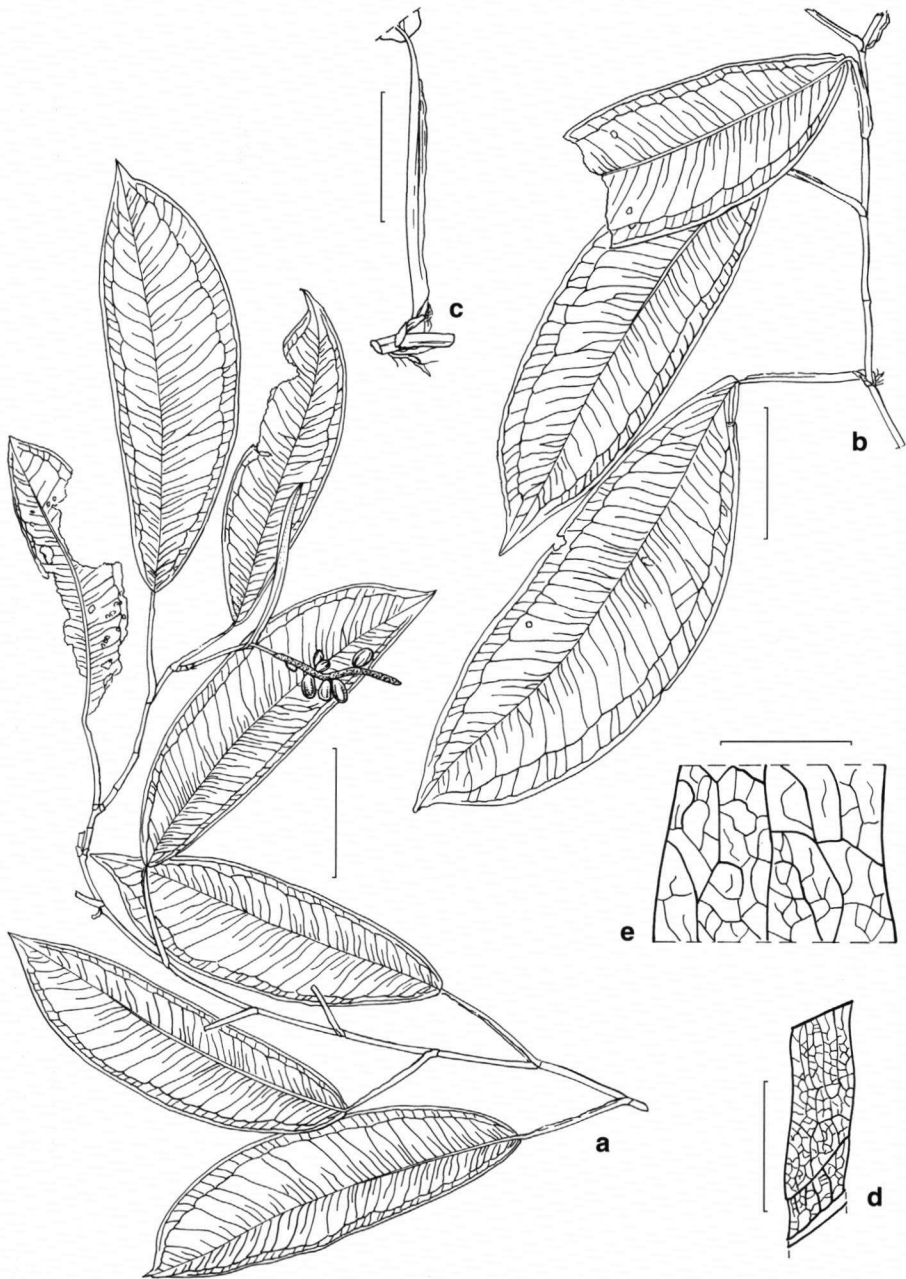


Fig. 13b. *Pothos lorispathus* Ridl. a. Fertile shoot; b. mature sterile shoot; c. petiole detail; d. venation detail with midrib and intermarginal veins; e. venation detail (a–e: *Boyce 1218*). — Scale bar to a & b = 80 mm; to c & d = 30 mm; to e = 5 mm.

ripening deep scarlet, with basal chartaceous tepal remains, stigmatic remnant tiny, on a flattened styler region. *Seeds* c. 4–6 by 2–4 mm, ellipsoid.

**Distribution** — Thailand, Peninsular Malaysia. Specimens attributed to *P. lorispathus* from Sabah and Sarawak require further study. They may be referable to *P. lorispathus* or may represent an undescribed species.

**Habitat & Ecology** — Damp to rather dry evergreen hill forest on limestone; altitude 50–100 m.

**Notes** — In the review area *P. lorispathus* is known only from Yala province, Thailand, where it occurs on limestone. Originally described from the Batu Caves, Selangor, Malaysia, *P. lorispathus* has seldom been recollected and is known from very few specimens.

Although sterile specimens are very difficult to distinguish, fertile specimens are instantly recognizable by the size and colour of the inflorescences; there are no other large green-inflorescenced *Pothos* in the review area. In the review area *P. lorispathus* is superficially similar to *P. lancifolius* but readily distinguishable by the lorate spathe, stipitate spadix and slender (not thickened) peduncle.

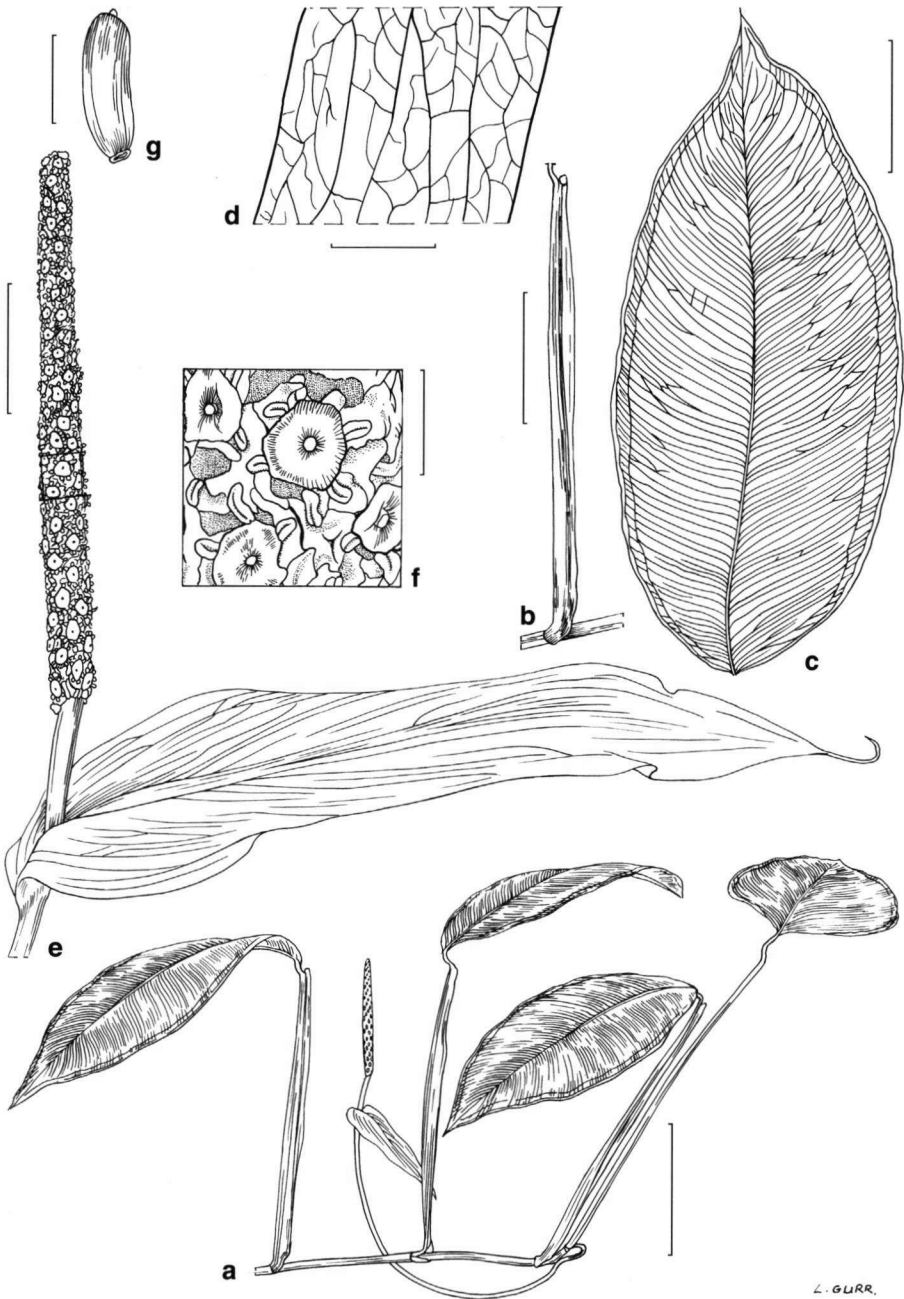
*Geographically representative selection of collections studied:*

THAILAND: PEN75. Yala: Bang Lang N.P., N 006° 12', E 101° 10', 30 March 1997, *Boyce 1218* (fl., fr.) (BKF, K and K Spirit Coll. no. 63296).

#### 14. *Pothos touranensis* Gagnep. — Fig. 14

*Pothos touranensis* Gagnep., Notul. Syst. 9 (1941) 136; in Lecomte, Fl. Indo-Chine 6 (1942) 1082; P.H. Hô, Câyco Vietnam [Ill. Fl. Vietnam – in Vietnamese and English] 3, 1 (1993) 420, pl. 8262. — Type: Vietnam, Lien-chieu, near Tourane (modern Danang), 19 Aug. 1923, *Poilane 7643* (fl.) (holo P).

Moderately robust, (heterophyllous?), root-climbing liane to 7 m. Eocaul not observed; stem of juvenile shoot to 2 mm diam., flexuous, terete in cross section, producing adherent flattened feeding roots; stem of fertile shoot to 5 mm diam., terete in cross section, mid-green to brown in dried material, leaves scattered, spreading. *Leaves* brownish green to yellow-brown in dried material; petiole 80–150 by 4–11 mm, canaliculate, rounded abaxially, narrowing towards geniculum, base decurrent, apex prominently geniculate, geniculum at first smooth, later corky, sheath very prominent, apically pronounced-ligulate, especially in young growth, sheath extending to geniculum; lamina 130–200 by 50–85 mm, broadly to narrowly oblong elliptic, 2 intramarginal veins per side, 1–15 mm from lamina margin, arising from just above base of the midrib, remaining  $\pm$  parallel to margin, terminating at the tip of the lamina, base obtuse to broadly rounded, apex acuminate to long-acuminate, apiculate. *Flowering shoot* (always?) contiguous with fertile shoot, inflorescence (always?) terminal on a leafy fertile/flowering shoot. *Inflorescence* solitary; peduncle 100–190 by c. 2 mm, robust, curving or straight, occasionally strongly bent basally, the inflorescence held erect, drying dark brown; spathe 60–90 by 15–20 mm, triangular, base rounded to truncate, decurrent on peduncle, apex acuminate; spadix stipitate; stipe 10–15 by 1–2 mm, stout, terete; fertile portion 35–55 by 3–4 mm, tapering-cylindric. *Flowers* 1.5–3.1 mm diam.; tepals, broadly ovate to fornicate, 1.5 by c. 1 mm. *Stamens* 0.75 by c. 0.5 mm, filaments strap-shaped, thecae 0.25 by 0.25 mm, oblong ellipsoid. *Ovary* 0.5 by 1.25 mm, compressed-globose to hexagonal-turbinate; styler region large, trun-



L. GURR.

Fig. 14. *Pothos touranensis* Gagnep. a. Fertile shoot; b. petiole detail; c. leaf: minus petiole; d. venation detail; e. inflorescence; f. detail of spadix; g. mature berry (a-f: *Poillane 7643*). — Scale bar to a = 60 mm; to b, c & e = 40 mm; to d & f = 2 mm; to g = 10 mm.

cate; stigma small, punctiform. *Infructescence* with few fruits; berries (immature) c. 2 by 3.5 mm, obturbinate.

Distribution — Vietnam.

Habitat & Ecology — Rather dry mixed hill forest on granite, on trees in very rocky soil; altitude 700–750 m.

Notes — An extraordinary species, immediately recognizable in Indochina by the immensely long peduncle, a character otherwise unknown in the review area but present in, e.g., *P. mirabilis* Merr. (Borneo) and *P. tener* Wall. (Borneo, Sumatera). Very few collections of *P. touranensis* have been made and, as with *P. gigantipes*, this seems to reflect natural rarity rather than undercollecting.

*Geographically representative selection of collections studied:*

VIETNAM: Khanh Hoa: Nha Trang, Co Inh Massif, 17 Sept. 1922, *Poilane 4593* (fl.) (P). – Quang Nam–Da Nang: Lien Chien, 19 Aug. 1923, *Poilane 7643* (fl.) (type of *Pothos touranensis*, holo P).

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